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# THE BRICKBVILDER

OFFICE 85 WATER STREET BOSTON

## THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF ARCHITECTURE IN MATERIALS OF CLAY.

PUBLISHED BY

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THE BRICKBUILDER is published the 20th of each month.

CONCEDING the proper object of this journal to be the encouragement of the best work in brick and terra-cotta, and with a view of presenting in concrete form embodiments of the principles which we have urged in these columns, we begin with this number of THE BRICKBUILDER the publication of a series of articles dealing with the designing and construction of a ten-thousand-dollar private residence. The first of the series is contributed by Mr. Charles A. Rich, the well-known architect of New York. It will be followed by similar articles by some of the leading architectural minds of the country, and the series will present the views of the profession as to the possibilities of brick and terra-cotta as applied to residences of moderate cost and dimensions. Our brick and terra cotta manufacturers have of late years given a great deal of attention to devising means for bringing their products prominently before the people in order to create a large demand of their wares, and to accomplish this they have sought the advice of architects and constructors and have adopted all of the well-known methods of properly advertising their products, some of the manufacturers having issued some very excellent monographs illustrating brick and terra-cotta architecture and its possibilities. All of these have had their use and have been fruitful in results, but we feel a special pride in the possibilities within the reach of this journal to call out and present the ideas which this series of articles will embody. It is the kind of encouragement of brick architecture, *per se*, which we believe will be most efficacious not only in developing the fact that brick can be used most advantageously under certain circumstances, but in going beyond this and showing specifically how it can be a factor in a thoroughly artistic as well as practical dwelling. The best way to encourage an art is to practise it. Ideal solutions are often in a general sense of more value than actual illustrations of existing work, and this series will correspondingly show how the thoughts of some of our best architects can find a fitting expression in the materials which are peculiarly ours to foster.

We cannot forbear offering just a bit of advice to our brick manufacturers in this connection. The advice has nothing to do with the size of the brick, its particular composition, nor the exact shade or coloring, all of which are matters which are capable of almost endless discussion and often with little real satisfactory result; but the most artistic dreamer as well as the most sternly practical constructor will agree with us that the best recommendation for a particular style of brick is to have it used in a thoroughly successful building, successful not as a matter of mere size nor as regards prominence of location, but successful in the artistic, beautiful lines which appeal so strongly to the architect, and which, as the years increase our measure of popular appreciation, will appeal with increasing force to the great mass of people who live in architect-built houses. So that our advice would be to the salesman who is seeking to have his bricks most approved by the public, to take pride and advertise the successful buildings from an artistic standpoint, to claim excellence of result rather than mere fineness of product, and to measure success by the artistic worth of the buildings in which the brick may become so integral a portion. The question of price is one which will adjust itself, the question of artistic result is one which has to be adjusted, and in proportion as good brick houses are built, in that proportion will good bricks be appreciated.

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THE lack of color in our modern architecture is often commented on, and we frequently hear expressed the hope that a more consistent and general use of color might prevail in our street architecture. Color is, however, almost a closed book to many architects, and the reason for this, we believe, is very largely timidity and a fear of spoiling the particular building which engages the attention. Timidity, however, never built great monuments nor led the way to any advance, and if we are to do color we must stop talking about it and get to work and do it. It is not every one who has a distinct eye for color, and it is not always possible to reason out in advance a scheme of applied color which will be successful. In this connection we are reminded of a most excellent designer whose chief title to fame was his ability to work out an uncomfortable corner or to straighten out an entangled bit of design. Indeed, it used to be said that he never could do a thing right until he had done it wrong first and got it all snarled up. Now that kind of reasoning applied to color is illogical, we admit, and of doubtful success as compared with the spontaneous conceptions of the true colorist, but for the average practitioner it is far better to plunge in boldly, make a mistake in his colors and then by using a little reason try and straighten them out, rather than to yield to the timidity which would lead him to abandon striking combinations entirely and adhere to the commonplace. For instance, let one of these timid designers some day try an experiment. Suppose he has a terra-cotta front, let him somehow put a great blotch of green right in the center. As he has got it there he has got to make it good looking, so the next step might be to put right alongside of it a brownish yellow; and if the green is a bright emerald-green hue such as we sometimes get in the

terra-cottas, let him put just a faint dash of purple between the yellow and the green and he will have a combination which he will have to use his wits to get out of. The chances are that it will be thoroughly bad; but by remembering the simple fundamental laws of harmony and contrast in color, remembering that in a general way red complements the green, and purple the yellow, and blue the orange, and by making a few studies in pastels, it would be very strange if he couldn't pull himself out of that combination with a result which ought to yield some very interesting and, after a few trials, valuable color effects. At any rate, after a man has done this once or twice his worst enemies would never accuse him of timidity, and if he didn't succeed in making a success of the combination he can, at least, console himself with the feeling that some other wayfarer, seeing his failure, might take heart, try again and do it better, all of which may not be particularly consoling to the owner who has employed the essayist, but it would be a step towards what we are all looking for, color in our buildings. If any one should undertake to analyze most any of the really successful architectural color effects, such, for instance, as the Della Robbia frieze on the Pistoja Hospital, it would be seen that the very colors which we have enumerated here are used in juxtaposition and that the unity is brought about by what is added after these had been thrown in; and though, as was said before, the best way is to feel the color in the beginning, to do it naturally and let it be *sui generis*, he who has not that endowment need not, therefore, content himself with the commonplace monotones. A friend of ours taught his son to swim by tying a rope around his waist and throwing him into the Mississippi from the deck of a steamboat. The boy learned to swim very promptly. A similar treatment of self-immolation on the part of our timid designers would very speedily give us, at least, the prospects of some strong colorists.

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THE aggregate fire loss in the United States for 1897 was $2,454,592,481, which is $2,382,845 less than in 1896. The insurance loss for the year was $1,438,902,448, or $7,181,655 lower than the loss for the previous year. This showing is smaller than for any year since 1890. A noticeable feature is that for the first time the yearly loss of New York was exceeded by that of another State, Pennsylvania leading with a fire loss of $13,706,315, and an insurance of $8,674,980.

The number of fires reported during the year was 55,779, of which but two caused a loss of over $1,000,000. One was at Knoxville, Tenn., in April, where the figures footed up to $1,019,725, and the other was at Pittsburgh, Pa., in May, when the loss was $1,905,515. The loss to the State of Pennsylvania on the buildings at Harrisburg aggregated $700,000. The greatest monthly loss occurred in January, when the property loss was $11,594,495, and the insurance loss $7,187,515.

There were burned in 1897, 33,033 dwellings and tenements, 11,811 barns, stables, and granaries; 1,753 general merchandise stores; 913 retail liquor stores and saloons; and 735 churches.

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PART of the $50,000 asked for by the National Academy of Design, in recent appeal to its friends for aid in the erection of the school portion of its new home on Morningside Heights, New York City, has been subscribed, and it is confidently expected that the balance will be raised soon. The architects, Carrère & Hastings, have estimated that the new academy, if built of the finest material in the best manner, would cost not less than $800,000, and the academy has only about $200,000 to meet this demand. It has been decided to erect the school portion of the building first.

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THE Chicago Architects' Business Association has prepared and copyrighted a full set of forms of contracts, certificates, waivers of lien, and other blanks, in accordance with the provisions of the mechanics' lien law of Illinois. These blanks were carefully prepared by a special committee appointed by the association, and are believed to meet every exigency of the lien law and the conditions of building in that section.

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COMPETITIVE plans for the $350,000 addition to the Ohio State House were submitted by Yost & Packard, of Columbus; H. A. Linthwaite, of Columbus; George F. Hammond, of Cleveland; Samuel Hannaford & Sons, of Cincinnati; and H. C. Lindsey, of Zanesville. The plans of Samuel Hannaford & Sons, of Cincinnati, were accepted. The structure will be completed in eighteen months.

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AT a meeting of the Executive Committee of the American Institute of Architects held in New York, July 21, the following persons were elected as Fellows of the Institute: Charles I. Berg, Albert L. Brockway, New York City; William H. Conway, Springfield, Ill.; Herbert W. Foltz, Indianapolis, Ind.

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BY operation of section 11 of the license law, nearly one hundred architects in Chicago, and thirty more in the State at large, having failed to renew their licenses during the month of July, have had the same revoked by orders of the State Board of Examiners of Architects on the first day of July, 1898.

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THERE will be 60,000 sq. ft. of white enameled brick arches on the under side of the midway floor of the new Southern Union Station, Boston, requiring in their completion 400,000 of the finer quality of brick, and 600,000 of the commoner kinds, in all a round million. Where the roof has been covered in the work of setting the arches has been started.

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## ILLUSTRATED ADVERTISEMENTS.

IN the advertisement of Fiske, Homes & Co., page vi, is illustrated one of a number of mantels which they have just finished for the new Ranleigh Chambers, Boston.

The Conestoga Building, Pittsburgh, Pa., Alden & Harlow

CARTOUCHE FROM THE PAVILION BUILDING, BOSTON.
Executed by the New York Architectural Terra-Cotta Company.
Burr & Sise, Architects.

architects, is shown in the advertisement of Harbison & Walker Company, page xv. Two residences, one of Justice H. B. Brown, Washington, the other of D. J. Hubbard, Esq., Chicago, are shown in the advertisement of the Celadon Terra-Cotta Company, page xxvii.

# The American Schoolhouse. X.

BY EDMUND M. WHEELWRIGHT.

THE Mechanic Arts High School in Boston was begun in 1893. It was not at first fully completed, and the addition originally contemplated for this building is about to be built. This addition, with certain changes in the original structure, will complete it with all the features shown in the plans here published.

The following description of the plan and appointments of the building is based upon that given in the last report of the master, Dr. Charles W. Parmenter.

The boiler room, coal room, engine room, and engineer's store room are in the basement. Here, also, are the principal toilet rooms and dressing rooms containing the clothes lockers, each of which is 23 by 18 ins. in plan and 5 ft. high; the floors and tops of these lockers are of stout wire netting. The doors have panels of the same netting and are fitted with combination locks. In one of the dressing rooms is the lunch counter. The forge shop is also in the basement.

On the first floor are the office of the master with lobby for visitors and library adjoining, chemical laboratory and room for chemical stores; two school rooms, each accommodating seventy pupils; three recitation rooms, the machine shop, the metal-working tool room, storage room for metal stock, office for the instructors in metal work, and a private room for men teachers.

THE MECHANIC ARTS HIGH SCHOOL, BOSTON.

On the second floor are the physical laboratory, with teachers' laboratory, and store room and dark room adjoining, private room for women teachers; two school rooms, identical with those on the first floor, two wood-working rooms for first-year pupils, the carpentry tool room and room for preparation of wood-working stock, and the finishing room.

On the third floor are three drawing rooms, two school rooms, a large recitation room, storage room for drawing materials, wood-turning and pattern-making room, a modeling room, and a toilet room. The drawing room at each end and the adjacent school room are separated by flexible doors so that the two rooms may be thrown together to furnish an assembly hall for occasional use.

Each of the drawing rooms has accommodations for six classes of thirty-six pupils. Each drawing table is fitted with a locker which holds six half-imperial drawing boards. The six drawers on the right contain the personal property of each pupil. In drawers above the locker are placed the drawing instruments furnished by the school board.

Over the teacher's platform in each drawing room, in addition to the slate blackboard on the wall, is a set of three movable blackboards placed one directly in front of another, and each hung by counterbalanced weights. In the rear of the larger room are the sink and racks for washing and drying blue prints.

Two adjoining rooms on the second floor are assigned to the department for wood-working with hand tools. These rooms are equipped for six classes of thirty-six pupils. Each room is furnished with eighteen double benches, 57 ins. long, 45 ins. wide, and varying in height from 29 to 33 ins. On either side of these benches is a tier of three drawers, one of which is assigned to each pupil, for the set of cutting tools with which he is supplied. Here, also, is kept his apron and unfinished work. Dividing the top of the bench in the center is a vertical tool board 9½ ins. high. At the ends of the bench, upon hooks and shelves, are kept the measuring and miscellaneous tools used in common by members of different classes.

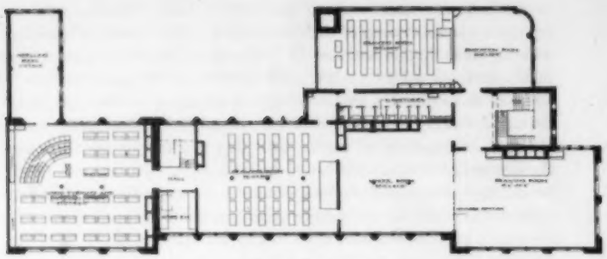
Each pupil is supplied with a tray for carving tools 26½ ins. long, 13¾ ins. wide, and 1¾ ins. deep, divided into compartments. These trays are stored in cases at one end of each room. In each room is a grindstone with trough.

The tool room, which contains a variety of minor supplies, together with a large collection of miscellaneous tools for occasional use, is located between the two wood-working rooms, and is entered from either of them. Many of the shelves in this room are divided by narrow strips of wood in such a way that each tool has its appropriate compartment. Each pupil is supplied with three brass checks bearing his shop number, one of which will be received by the person in charge of the tool room in exchange for any desired tool. The check is placed in the compartment from which the tool is taken, where it remains until it is redeemed by the return of the tool.

Opening out of one of the wood-working rooms is a small room for the preparation of stock for models and for special saw work, in which is installed a double-arbor bench saw, a band saw for the use of the instructors and especially skilful pupils only, and a jig saw which all the pupils are permitted to use. The location of these saws in a separate room permits their use without disturbance to class exercises.

There are thirty-six benches in the wood-turning and pattern-making room. On one side of the bench is an 11 in. speed lathe, the other end is used for hand tool work. As in the other wood-working rooms, these benches are fitted with 9 in. quick-action vises. Beneath the lathe is a tier of three drawers, in each of which is kept a set of turning tools. On the opposite side, under the work bench, is a tier of four drawers. The top drawer in this tier is devoted to the measuring and miscellaneous tools used in common, while each of the three others contains an undivided set of cutting tools.

The forge shop, when constructed in accordance with the plans here shown, will be 40 ft. long, 100 ft. wide. It is to be lighted both by windows in the wall and by a large monitor with skylight. The restriction of the site necessitates a closer relation of the forge shop with other parts of the building than is theoretically desirable, but the experience with the room as originally constructed proves that the noise incident to the work of this shop will be of but little practical disadvantage in spite of the closer connection given by the enlarged shop; at least, this disadvantage is not enough to outweigh the advantage of the equipment of this shop for the



THIRD FLOOR.

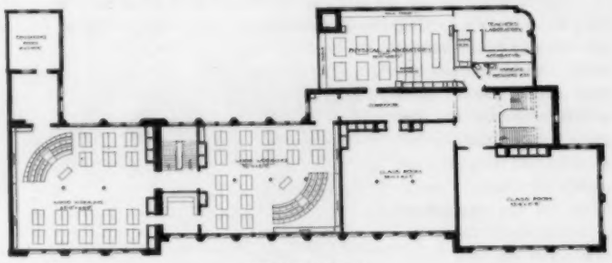
instruction of thirty-six, instead of, as formerly, twenty-four pupils in a class.

The forges, of the Sturtevant single-fire, down-draft pattern of the latest make, are to be ranged on each side of the room, and in a double row. An 130 lb. anvil is to adjoin each forge, and near by is to be a tool bench. Each boy has a drawer in this tool bench for the storage of models and for his hammer.

Eleven blacksmith's vises are attached to benches 21 by 30 ins., 34 ins. high. The blast for the forges is to be given by fans, by which also the foul air and the products of combustion are to be carried off through underground ducts to the aspirating shafts through which runs the boiler flue. The instructor's forge and two other forges are to be supplied with hand blowers for use when the engine is not running. Near the instructor's anvil is to be a 75 lb. power hammer. At the center of the room is to be placed a combination power punch and cutter. Attached to the wall near the power hammer is to be a drill press. At the opposite side of the room, resting on an iron bracket bolted to the wall, is to be a grinding machine, which carries at each end of the spindle a 12 by 1½ in. emery wheel. At the end of the shop, opposite the instructor's forge, will be two cases for the storage of supplies and special tools. The equipment of the room is to be completed by a bolt-heading machine, an oil tank, a brine tank, and a swage block.

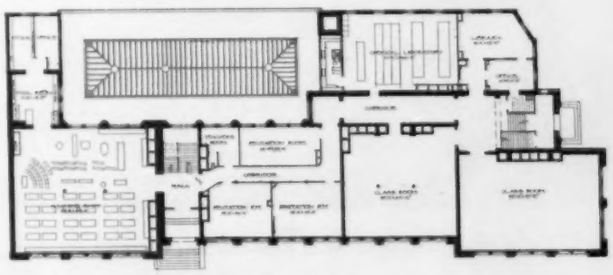
The machine shop is equipped for classes of twenty-four pupils. The benches, 20 ins. wide and from 32 to 36 ins. high, which extend along three sides of this room, are divided into twenty-four sections, each provided with a vise and with a tier of four drawers. One of the three lower drawers is assigned to each pupil, but the top drawer is reserved for the tools used in common by members of different classes. In his individual drawer the boy stores the work upon which he is engaged, together with about a dozen files and a set of chisels and lathe tools. At the beginning of a lesson each pupil obtains from the tool room a tray adapted to fit a compartment either in the upper drawer at his bench or on the tool board of his lathe. This shop is equipped with the following tools: Twenty-four lathes, nine hand lathes, two planers, one pillar shaper, one milling machine, one tool and cutter grinder, two upright drills, two grindstones with troughs, one wet and dry grinder, one arbor press, one power hack saw.

Each engine lathe is furnished with a tool board of special design, adapted to receive the tool tray, and to provide a convenient place for cutting and miscellaneous tools. Upon pegs in a vertical board fastened under the bed of each lathe are kept the face plates, change gears, back rest, chuck drill rest, and a set of dogs. There is no available space for an amphitheater similar to those in the wood-working department. During the demonstration lessons pupils occupy tablet armchairs grouped about the instructor's bench, which is placed in front of a large blackboard in the rear of the room. Near at hand is the tool



SECOND FLOOR.

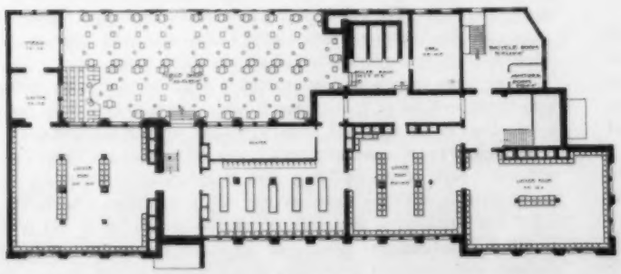
room, furnished with shelves and cases for the numerous tools required for the various kinds of work. One of these cases which stands near the door contains the small tools likely to be needed frequently, and the tool trays previously mentioned. An attendant delivers these trays to the pupils at the beginning of the lesson, and is always ready to furnish any desired tool in exchange for a pupil's check. The universal tool and cutter grinder and the power hack saw are located in this room.



FIRST FLOOR.

It is the opinion of Dr. Parmenter that it is inadvisable to have more than twenty-four pupils in a machine-room class, even when the arrangement of the building is all that is desirable when it is equipped, and with the best appliances, as a larger number cannot receive the requisite individual supervision by the chief instructor; and further, that in none of the other mechanical departments of such a school should there be a greater number than twenty-four in a class unless the arrangement of the building is thoroughly convenient and the equipment is of the best pattern and quality.

The experience in this school also shows that the large class rooms for seventy pupils are undesirable unless supplemented by an ample number of large recitation rooms, each to accommodate thirty-six pupils. The Boston school, if space had permitted, would have been provided with two such recitation rooms in addition to those which are shown on the plans.



BASEMENT.

# Suburban Residence Built of Brick.

## COST, TEN THOUSAND DOLLARS.

BY CHARLES A. RICH.

THE author of the "Story of My House" remarks that "if we leave the house to the architect, he builds merely for himself — he builds *his* house, not yours." This is just what we propose to do. The client has left the office, and, thank Heaven, has put the ocean between us, and has left nothing behind to remind us of his existence except a brief page of "necessities" and a bright, crisp check for ten thousand dollars. We place it on ice for preservation until the house is completed.

EXTERIOR.

Our client does not have to earn his daily bread; his father was an engraver and etcher of note, and upon taking up his residence among the justified, left to his son not only his own good taste in matters of art, but also sufficient to keep the wolf from the door. The young man meanwhile gave promise of being sufficiently gifted in black and white to keep himself and the toby closet well stocked with the necessaries of life. Thus our work on his house is cut out for us and made the more easy. Now, since every man has what may be called his own distinct character, so it seems to us that his home should reflect somewhat of this character, at least as to his needs, so that the man will fit into the house, and his desires and modes of life find expression in the general arrangement of parts.

To begin with, we find in the list of "necessaries" that our own hobbies have been met to the letter, and we can practically build to suit ourselves. This is his first house, but it is our one hundredth or more, so we ought to know what he ought to want.

To illustrate our hobbies: I have known a man who would willingly go without the almost necessary apparel of civilized man, and perchance be down at the heel or lacking in buttons, yet he would buy beautiful pictures, or books, or bric-à-brac. Now this man is sensible; he gets all there is enjoyable in life, although some people think his discrimination curious. Just so in our house we shall insist upon an enormous room which we shall call "the living room," even at the expense of all other reception quarters, wainscots, carvings, etc.

ENTRANCE.

We shall also insist upon a fireplace in this room of rooms that shall grow sick at any wee billets of wood, and demand the good old-fashioned logwood bonfire. The expense of a few cords of good cheer often wards off dollars' worth of gloom and blues. I remember in old-time fireplaces there were nooks and crannies, cupboards and closets. Not to be beaten by our forefathers, therefore, in matters so important, we simply call attention to the sketch of the fireplace, the facing simply laid up in soft red brick tile, with the inviting little toby closets on each side, and the shelves of which seem to indicate the insidious cocktail and the fragrant Havana. We never see them, they are for our friends, of course.

Secondly, every man must have a place of retreat, his den, his workshop, his library, whatever you may choose to call it. He must have a place of retreat where he may lock himself in, or be locked in upon occasion. In this particular case, about the only instruction of our client was to have his den towards the north, so that when the inspiration struck him, he might the better carry on his work. A glimpse of this room may be seen in the plan through a picturesque little balcony in the living room, the floor being raised five steps above the hall level, and the opening being filled with an old iron gate grille, picked up, we will say, in Spain, or some other foreign clime.

Since our check is not large, we cannot reasonably expect a large house, so you will note that the den and kitchen quarters are but one story high. But this gives the possibility of running the den roof on a pitched slant, whose real timbers we have exposed and neatly stained green, and whose roof will not be hot in summer, being towards the north. The sketch will show you the general treatment. Here is an all brick mantel made of soft green-glaze brick, simple in design, but running high up and all exposed.

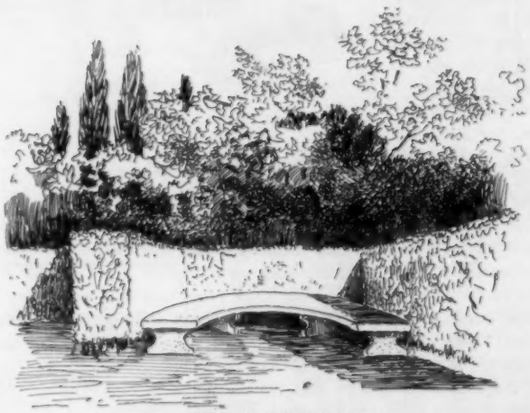
We insist that with most people beautiful surroundings induce beautiful things. Our client, therefore, as he sits at his work table, shall have before him an old rose arbor, bright with shadows in the morning, and soft and cool in the shade of the afternoon, and if perchance his mind wanders, as he works, to those cooling retreats of a Capri or an Amalfi, he will find a little doorway in the corner of his room through which he may glide into his arbor and revel in the same day dreams of those lovely spots. He, too, if he will, may

LIVING ROOM.

have his *siesta* in a grape or rose shadowed arbor, and if he has been sensible enough in his purchase of a hillside to overlook a water view, his dreams may be sweet indeed.

Our last point of insistence concerns the mother as well as the head of the house. Have you ever lived in a house with a growing family and a single bathroom, bluntly speaking? If you have you have probably too often stood in abbreviated costume, awaiting your opportunity to slide in and enjoy your morning plunge. We trust you did not have to take the 8.20, for if you did, you have often waited in vain, and after words not fit to be printed have given it up. Yes, "godliness with contentment is great gain," but contentment can never be attained with one bathroom, and as for godliness, well, that is out of the question under such trying circumstances. We insist, therefore, on two of these luxuries, and do not forget a third for the servants, an absolute necessity in our mind.

Lastly, we are selfish men! We admit it; and since we are to spend one third of our life in nocturnal repose, we propose to have our sleeping apartments the largest and most comfortable the house affords. We must be awakened in the morning by gladsome sunshine, if we will, and not by the shades of the past night. And this same gladsome sunshine must flood this apartment each hour of the day; for it must be remembered that since the house is of modest proportions, this room is largely the day home of the wife, and her comfort is to be equally looked after. What applies to the man must the more apply to the wife: another reason for its largest size. Adjoining, and full of all-day sunshine, come the quarters of the children. They, also, are equal factors in the home life, and as such must have a slice of the best accommodations possible. And what about the guests? Well, they are transients and must be content with what is left.



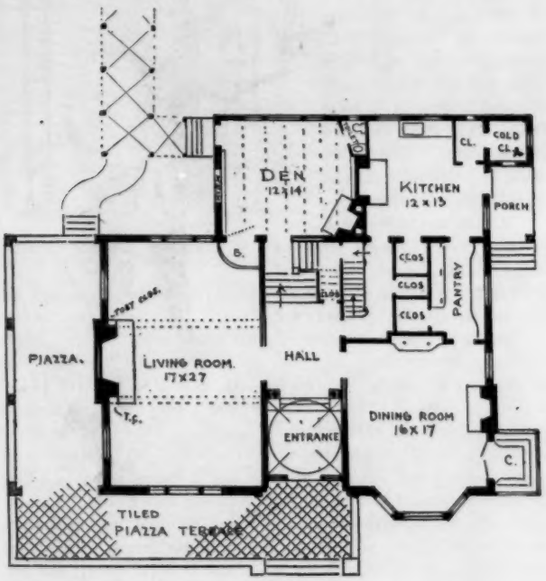
·AT·END·OF·PIAZZA·

DEN.

While you have been upstairs we have been preparing the entrance. Here we intend to make a departure from the general mode. We came across a beautiful, ivory-colored speckled brick while we were considering the plan, and at once determined to enter the house on a lower level, make a sort of lower vestibule with tiled floor and side walls, and simply groined ceiling of these soft-colored bricks. Why not? Introduce, then, a frieze of the old Parthenian casts, recalling thus to the mind the beauties of the Acropolis, and we surely have an inviting entrance. We also have a place to seat the persistent book agent, the aromatic piano polisher, the messenger boy, or that constantly appearing personage known to every household as the "unknown." Even so, let it be all brick and tile, to intimate that he who stops there is yet among the outside elements, and may not ascend to the hall.

But one cannot think of his home without placing it among its surroundings, which to make up a whole are necessary and essential parts. The

very trees which overhang their branches, the hedges, gardens, and shrubs which lend color and tone to the picture, each one plays its part. Think for a moment of the sunny slopes of an Italian landscape, the broad terraces, and the grape-covered arbors. They are the cheapest accessories of the home, and yet they are the features that give esthetic and artistic character to the whole. They are full of sentiment; the very rustle of the leaves, or their ever-varying shadows are joys which increase as nature showers on them an ever-increasing wealth of foliage. Our ground slopes up gradually from the front, and we will build a low brick wall with old gate posts, and wide and generous steps. Back of this, across the front, shall be a low box hedge garden, such as is dear to every old New



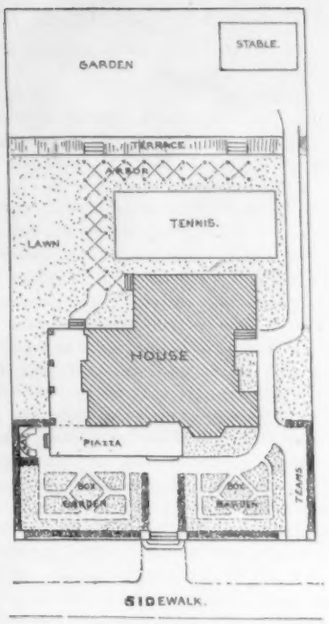

FIRST FLOOR.

England recollection. At the end of the piazza we shall mass the trees, form the hedge with a sort of recess, and therein place a little circular bench, a cool retreat in the morning or after the shadows have fallen in the late afternoon. And then at the rear, as I have already pointed out, we shall form the arbor, and tennis court, and back of this the garden. Do you tell me this seems very beautiful in the word picture, but seldom exists in reality in ten-thousand-dollar houses? Then we shall retort upon you that it is the client's fault and not the architect's. This client is going to have it at any rate, and if you doubt it, you have only to look at the little plan of the grounds.

But what of the outside of our house and its general construction? Louis Stevenson portrays his house in poetry:—

> "Here all is sunny, and when the truant gull
> Skims the green level of the lawn, his wing
> Dispetals roses; here the house is framed
> Of kneaded brick and plumed mountain pine,
> Such clay as artists fashion, and such wood
> As the tree-climbing urchin breaks.
> My house, I say."

So let it be; good red brick, and its enrichments shall be of terra-cotta of the same character. We shall select a hard-burnt common brick and shall thank our brickman if he will send us all the old black vitreous cast-off odds and ends of his kiln. A curious order to a layman, who will not look at them in the pile, but will wonder at their beautiful effect when laid up with random headers, with white pointing. No feature is so well adapted to our material as the arch, and we shall therefore use it for our entrance and the two large windows in the living room. The quoins shall be simple with deeply molded jambs of brick. In the gables we shall still use brick, but dispose of it between the heavy open beams in diaper patterns. Thus is every component part of our house formed from the clay of which the scripture informs us on good authority we, also, are most wondrously made. Thus, also, is our client and his house bound together by a common tie, and singularly enough, the house will outlast the client.




PLAN OF GROUNDS.

But after all, why describe the exterior further? Candidly, we live in the interior, and the exterior is but the shell, which we have pictured to be of simple form to cover the plan. "I like it—I like it not," and herein is contained the whole matter.

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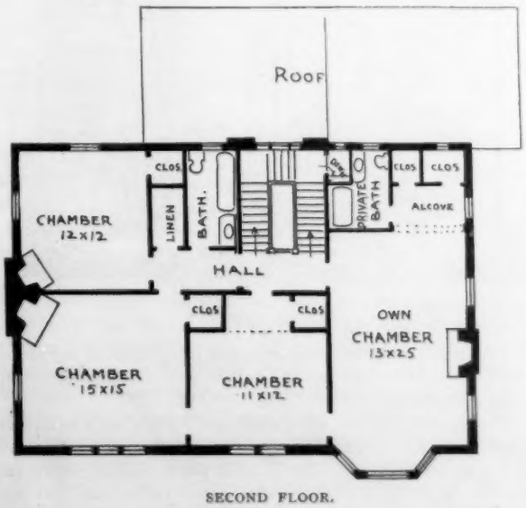
THE discussion on the extension of the Boston fire limits has reached a rather acute stage. It is argued that to build of brick is so much more costly than to build of wood that the owners of land in the less thickly settled wards could not afford to improve their property, but must sell at a loss, and the value of land so restricted would be greatly reduced. This notion seems to have produced a certain effect upon the public, but, like a good many other apprehensions which stand in the way of public improvements, it would be hard to tell on what real foundation it rests. Certainly, the prohibition of wooden buildings in Philadelphia has neither ruined the suburban districts nor deprived the poorer citizens of homes. On the contrary, in no great city on this continent are people of small incomes housed so safely and comfortably as in the little brick houses of the outlying parts of Philadelphia. — *American Architect.*




SECOND FLOOR.

# Brick and Marble in the Middle Ages.

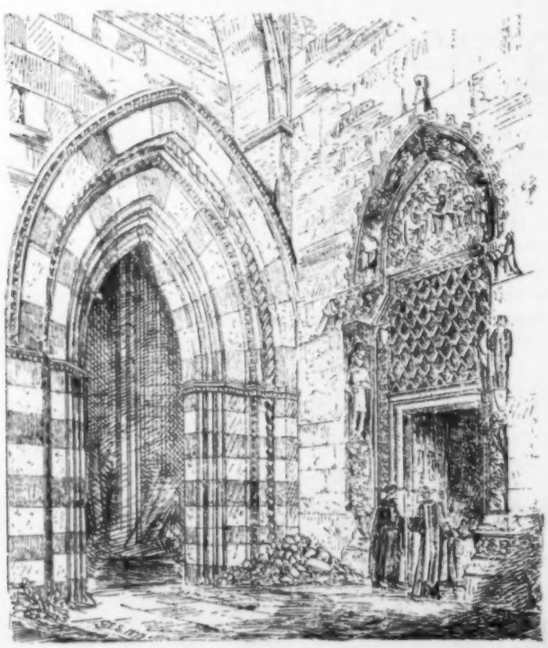
BY G. EDMUND STREET.

## CHAPTER IX. (*Concluded.*)

AT Aquileja the appropriation of pagan fragments was carried so far that we found Classic capitals doing service as holy-water stoups.

The interior of the eastern part of the church is more interesting than that of the nave. It is all probably of the original foundation, and retains most of the old arrangements. The floor of the choir is raised some ten or twelve steps, with two flights of steps on each side of the centre. At the top of these steps, projecting sideways into the transepts, are tribunes with open balustrades which seem to have served as ambons. The apse has two rows of seats, with the patriarch's seat raised in the centre, and the altar stands in front of this on the chord of the apse. It is curious that this, which is an apse internally, is a square projection from the transept externally.

A descent on each side under the tribunes leads to the crypt under the raised choir. This is very small, but is divided into three aisles in width, and four bays in length. The central space is screened round jealously with close grilles reaching from floor to vault, so as to protect the shrine of S. Hermacora, which occupies the centre. But little light steals into this crypt, and that little has to find its way between rank weeds which grow up round the windows; but there is quite enough to reveal vaults covered with paintings of subjects, and to show as picturesque and beautiful an *ensemble* as one need wish to see. Kneeling desks were placed round the shrine, but the cultus of S. Hermacora seems to be no longer popular, and the only pilgrims are curious visitors like ourselves.

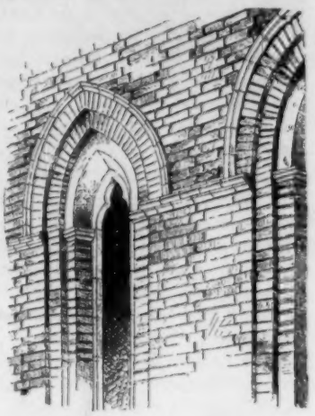


DUOMO, UDINE.

The paintings on the groining appeared to me to be of not earlier date than the fourteenth century, and are very cleverly contrived to suit the early vaults.

The transepts remain to be mentioned. Each has a small eastern apse near the extreme end, and a tomb or shrine between this apse and the choir tribune. These are of the thirteenth century, and are enormous blocks of stone, panelled and carved in front, and supported on four detached shafts. In the south transept there are fragments of a Byzantine screen round the altar in the small apse, which are of rare beauty and intricacy. The screen consisted of a solid base, breast-high, covered with carving, and upon which columns stood originally at intervals of six feet, just as in the screen at Torcello, of which I have given a view.

There is an early painting of Our Lord, seated on a throne in the semi dome of this apse, and there are remains of an early wall-painting in the choir-apse, partly covered by a fifteenth-century picture in a good frame. The choir stalls are of elaborate intarsiatura work, and date from the end of the sixteenth century.



AISLE WINDOWS, DUOMO, UDINE.

A little way to the north of the church stands its campanile, a tall plain mass of masonry, with the date MDXLVIIII. on the upper stage, and the inscription "*Tadeus Luranus hoc o. fecit.*" It is worth the climb to the top to get the view over the flat surrounding country, which reveals what one fails to see from the dead level of the road, that the Adriatic is not far off — far enough, it is true, to have ruined the port of Aquileja — but so near as to be a very important element in the fine prospect. From here we saw through the haze the island of Grado, on which I cast longing eyes in vain. My information as to the distance had been all at fault, and I thought that in a long day from Gorizia, I might see both Aquileja and Grado. This is, however, quite impossible, as the boatmen required, they said, three hours for the *trajet* each way. It was a misfortune to miss the church at Grado, which contains much that is worth seeing, and has considerable historical interest, as the seat of a patriarch, whose jurisdiction included Malamocco, Venice, Torcello, and Chioggia — and whose importance is vouched for by its old titles, "Venetæ oræ Istriæque Ecclesiarum caput et mater," and "Aquileja nova."

The patriarch's throne and the ambon or pulpit, which still remain in the church at Grado, are evidently extremely fine examples of Byzantine furniture. The former corresponds with that of Aquileja, but has the rare addition of a flat canopy or tester supported in front by two columns, which rest on the side walls of the steps leading up to the seat. Probably there was a similar canopy at Aquileja. The dignity of the patriarchal throne is not a little increased by the addition, simple as it is in its decorative features. The pulpit is even more striking; it is six-sided, all the sides being arranged in a series of bold circular projections, with sculptures of the Evangelistic emblems on their face. The pulpit is supported by a central shaft, and six smaller columns alternately plain and spiral, and above the pulpit a series of octagonal shafts are provided to support a canopy or dome over the head of the preacher. These columns carry arches which are of the common Venetian ogee trefoil outline, and, there can be little doubt, are later than the pulpit. The combination is, however, very picturesque, and not the less interesting in that it has a most strangely Eastern look.[1]

The rest of my party went, whilst I was sketching in the cathedral at Aquileja, to look at the baptistery. They reported it to be as completely modernized inside as it certainly is outside, and so I failed to enter it. I believe I lost nothing, though at one time it was well worthy of a visit.

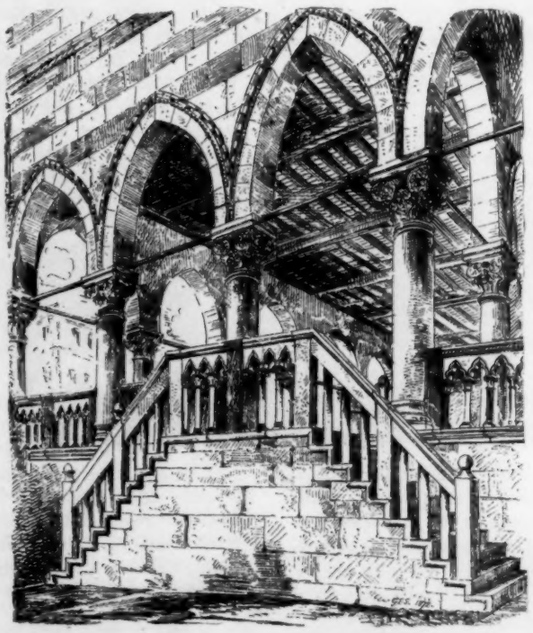
A rapid drive back to Gorizia was made with the advantage of

[1] I take these notes of Grado from "Mittelalterliche Kunstdenkmale des Oesterreichischen Kaiserstaates." Stuttgart, 1858.

a view of the mountains before us all the way; and we arrived in time to avail ourselves of the last train to Udine, which we did not reach until after dark.

I arrived here in entire ignorance of what might be in store for me in the way of my art. I had seen no drawings of any of its buildings, and I suspect that most of my readers are in the same state of ignorance. It was with no little pleasure, therefore, that my earliest stroll in the morning brought me to a Palazzo Publico, which if not exactly magnificent in scale is at least very important, and has the special merit in my eyes of being all Gothic, and almost unaltered on the outside since its erection. It stands in a piazza which some sixteenth or seventeenth century scenic architect has treated with considerable skill. One or two public buildings and a steep hill behind them have been dealt with in such a way as to call to mind such a disposition of buildings as one sees, e. g., on the Capitol at Rome, and no doubt so as to increase very much the apparent importance of this little city. The Palazzo Publico is a building of two stages in height, the lower entirely open with pointed arches resting on columns, and the upper presenting on its principal front a large balconied window, or Ringhiera, in the centre, and smaller windows on each side of it, and at the ends. The cornice and roof are modern, otherwise the whole design is intact, and exactly in the state in which its architect left it. The character of the design is clearly Venetian, and the date about the beginning of the fifteenth century, but still it is not slavishly Venetian as the houses of Vicenza are, but on the face of it the work of a local architect who knew enough of what was being done in Venice to profit by it without absolutely copying.

The lower or ground story is open on three sides, and has ten arches in front, and five at each end. The space inclosed is irregularly divided by a longitudinal line of columns, carrying semicircular arches, which support the walls of the rooms above, the access to which is by a modernized staircase in the rear. The materials of the walls are generally red and white marble. The balustrades between the columns and the staircases leading to them are so good and complete as well to deserve illustration. The upper part of these, including the cusped heads to the openings, is of white marble, whilst the shafts are alternately of the same material and of serpentine. The upper story is modernized within; but one learns to be grateful for small mercies, and it was certainly with every feeling of gratitude to later architects that I sketched this really beautiful building, which they have been good enough to leave so nearly unaltered on the outside.



PALAZZO PUBLICO, UDINE.

The state of the cathedral is less a subject for thankfulness! The whole building has been completely modernized within and without, with the exception of the west front and the tower. The former was the façade to a nave with two aisles on either side, or perhaps with one aisle and chapels beyond. All the roofs are of the same flat pitch, and stepped regularly so as to give a broken and bad outline to the mass. The work is mainly of brick, with some good detail in the windows of the outer aisles, of which I give an illustration. The west doorway is of the fourteenth century, with a very steep crocketed gable between pinnacles, and a badly sculptured tympanum with a curious assortment of subjects; in the centre the Crucifixion, right and left of this the Resurrection and an Agnus Dei, and above it the Nativity. Three circular windows light the three centre divisions of the front, and the two lower are connected by a broad band of brick arches which crosses the entire front just below the central circular window. There is not a word to be said in favour of such a design. It *is* old, and that is its only virtue!

The tower is more interesting, though it is only an incomplete fragment. The lower stage is of stone built in dark and light courses, with a large sunk recess on each side. On the west side is a fine doorway built of alternate courses of white marble and serpentine, and there are small circular windows in the cardinal sides just above the lowest stage. Above these the whole is a plain mass of brickwork, of which a very small portion only seems to be original. This tower is no less than fifty-two feet in outside diameter, and its lowest stage is finely groined, with no provision for the passage of bells. It might almost as well have been intended for a baptistery as for a tower! It stands close to the north side of the choir, and by its side is a rather fine doorway leading into the transept, with a good deal of late Gothic sculpture and architectural detail. There are niches and figures in the jambs and round the arch, the Coronation of the Virgin under the latter, and figures of the Annunciation stuck against the wall on either side in a very haphazard fashion. The strange contrast in style between these two doorways will be seen in the illustration which I give. Here we have, side by side, examples of the most pronounced kind of two national styles of Gothic; the door into the tower being as clearly Italian in its beautiful colour and refined simplicity, as that into the church is German in its cleverness, want of repose, and hard angularity of detail.

The only other old churches I could find in Udine were San Giacomo and that of the Ospidale. The former is modernized, but retains an early square brick belfry, arcaded below, and with simple pointed windows of two lights above. The church of the Ospidale is also modernized. The façade has a gable with an old brick eaves-arcade, and the only too common feature of a large circular window inclosed within a square border.

A picturesque Renaissance well-canopy (dated 1487) over the Fonte di San Giovanni was the only other feature I could find worth sketching or making a note of; and having seen everything, I took the railway on again to Venice.

The views of the Friulan Alps, under which one travels for some distance, are very exquisite. We passed Conegliano, where I once left the railway for a journey through the heart of the Dolomite country to Cortina d'Ampezzo, and, to my regret, hurried past Pordenone, having forgotten that at any rate a tall brick campanile was there, which seemed to promise some reward to the visitor. It is of plain arcaded brickwork below, and the upper stage is slightly battered out with very tall machicoulis, from within the parapet of which a smaller octagonal stage rises, covered with a low spire. The whole composition as one sees it from the railway is unusual and very good, and recalls just a little the campanile of the Palazzo Publico at Siena.

# The Grueby Faience.

BY C. H. BLACKALL.

THE opening of Japan to the commerce of the West less than two generations ago brought to what we are pleased to call civilized nations an art development, which, though at that time regarded as barbaric, has since been accepted as a manifestation of the highest appreciative and creative perception. Japanese pottery and faience have set the style for the whole civilized world, and for nearly half a century the aim of our foremost potters has been to produce something which will compare with the Japanese porcelains. It is not for this generation to say how much success has attended our attempts at imitation. We cannot fairly judge of our own achievements as compared with what was produced by a far-off and alien race, but it is certainly given to us to appreciate a pretty full measure of progress which has been ours, and by comparison we can form an estimate of the direction in which the forces of development are tending. As a nation we have been too busy to produce great art works. At any rate we have certainly given more attention to the utilitarian arts than to the purely esthetic developments of human intellect, and until a very recent period it is doubtful if there could have been found in the whole of this country a single manufactory capable of turning out pottery or faience which was worthy for a moment of being compared with the average work of the Japanese, either in design or in the mechanical details of artistic workmanship. It has taken us a long while to approximate the fundamental instincts of the Japanese craftsman, namely, that the art of a piece of pottery is not necessarily dependent upon the amount of work expended upon it, or upon the fineness of the material, but is a direct factor of the thought and appreciative skill possessed by the one whose hand is responsible for the result. That we have learned this lesson to at least a limited extent has been manifested by a recent exhibition in Boston of the work of the Grueby Faience Company. It has been a privilege and a pleasure to watch the attempts which Mr. Grueby and his earnest colleagues have been making for a number of long, weary years to develop the manufacture of artistic faience, a manifestation of industrial art which has until recently obtained but scant recognition, but which is bound to take an important rank; and it is a pleasure to record the persistent struggles which the Grueby Company have maintained to produce something which was perhaps a little beyond the average market, but which was certainly in a direction which the country is rapidly growing to, and which appeals most strongly to the artist. It is this kind of imaginative work which is deserving of the utmost encouragement. It is by efforts such as have been made by this concern that our artistic manufactures are going to rise, and surely no one who is familiar with the best of the Japanese work could have visited this exhibition without being impressed with the extent to which these craftsmen have been able to give to their work the elements of sincerity, of perfect fitness, and of thoroughly artistic good taste, quite irrespective of mere fashion, which go so far towards forming the fundamental worth of the Japanese product. The Grueby faience and pottery

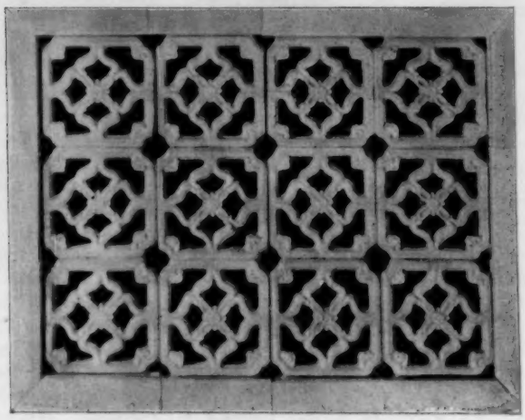
is not Japanese, except in that the spirit is common to Japanese work. The motives in this work are in many cases frankly borrowed. Life is too short and the nineteenth century is too well educated to feel any necessity for arbitrarily inventing all details, but borrowing, as these artists have, from the past, from Italy, Spain, or Japan, is merely bringing to us a little measure of the art which has graced our more fortunate neighbors, and showing us how problems can be solved here quite as successfully as there.

Some of the purely architectural faience work of this company is not unfamiliar to the readers of this publication, having been well known for a number of years. The exhibit included some excellent high relief work in the style of the Della Robbias, with the same treatment of enamels and strong glazes which characterizes the work at Pistoja. The value of such work is in its careful modeling and judicious coloring. Technically it is quite as satisfactory as the older work. There has been as yet but little opportunity to see such work in place to any great extent, but there is surely no mechanical or artistic reason why, if the need arose, it could not be quite as satisfactorily met in this medium. Another application of faience which was illustrated in the exhibition was in the form of balustrades for terraces, conservatories, etc. The work shown by the illustration is a dull blue, and was a portion of a railing used in a house at Cambridge. There are possibilities in openwork filling of this description which are very entertaining, carried out either in full glazes or in the dull mat finish, which Mr. Grueby has been able to apply very successfully to a number of the architectural forms. There was exhibited also a large lion's head,

very boldly modeled and enameled a dull copper bronze, with a mat surface, having all the effect of wrought bronze.

In tiling there were a number of interesting pieces. The illus-

tration shows one of the Moorish patterns. The main lines of the design are in low relief, the pattern being brought out by the enamel-

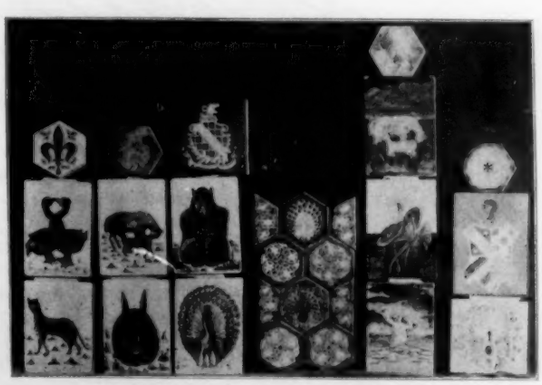


ing settling into the hollows. The upper border shows a buff key pattern on a pale green ground, with an edging of strong blue. The palm pattern below it is a deep blue glaze ground, with a mat, dull green pattern. The coloring of the tiles themselves can only be approximately appreciated from the photograph. The strong squares of colors at the corners are in a deep indigo blue. The center of each pattern is a pale blue, the radiating figures are green, and the groundwork is a cream with the intersecting patterns forming the outer row of each tile in yellow. The yellow is a bright glaze, and all the rest is dulled to a mat finish. The glaze over the lines of the pattern is very thin, so that the tile body, a pale gray, shows through, with the dull effect of mortar joints. This tiling is a very close imitation of the coloring and of the effect of the old Moorish tiles.

There were also shown a number of exceedingly interesting hand-painted hexagonal tiles with a mottled blue ground, with figures and patterns in slight relief, showing exactly the quality of old majolica ware. There were also some nursery tiles, so to speak, blue patterns and white ground, the ground, however, not a clear white, but a sort of gray crackled effect. These were very interesting and extremely effective. And there was exhibited a part of a set of peacock tiles designed for a fireplace in Cambridge, and a number of heraldic and pattern-work tiles in which the outline of the figure was formed with slip and the colors put on under the glaze. In all of this tiling work there is an entire absence of the machine effect which makes a great deal of our modern tile work so monotonous, and there is a fresh sketchy treatment of the designs which entirely removes them from the commonplace.

The exhibition included several large panels, which had been painted over glaze, by Mrs. Eliza M. Fairchild, for a frieze in the Dutch Room in the Hotel Reynolds, Boston. These were in Delft blue on a white ground, and in a decorative way were quite interesting, though, to our mind, not possessing the intrinsic charm of some of the nursery tiles.

The pottery that was exhibited was in many respects unique. All of this was hand made, thrown up on the wheel with a keen sense of proportion and subtlety of line which can best be described as throughly Japanese, while the variety of shapes, the different contours, indicated a most fertile, directing mind. They included jardinieres, flower-stands, incinerary urns, and other shapes, useful and ornamental. The illustrations show only a few of the forms, and utterly fail to give the exquisite color effects. There was a lot of ware made with a grayish body with dull crackled effect running all through it under the glaze, something in the style of the old Satsuma ware, the glaze being kept down to a very dull mat surface. These were especially artistic both in outline and in effect of color. One jar, which is remembered with especial delight, was a tall shape, standing eighteen or twenty inches high, with a ground of pale dappled green shot through with threads of white, filmy crystals under the glaze, giving the effect of a bit of old Genoa damask; a kind of jar which would make the collector's heart warm to the very cockles, and would be a thing to put upon the corner of a mantelpiece and worship devotedly every morning — one of those bits of individuality which are only possible when an artist is willing to linger lovingly over the decorating of a piece of earth, and to experiment, and try and hunt out new artistic possible combinations of chance and thought. Then there were a number of shapes in a mottled silvery yellow, which were peculiarly effective; and there were several large jars in pale greens and warm browns, with mottled wave lines running around the surface, and quaint handles on each side; jars that had no purpose but their beauty, and fully and completely answered that purpose. In fact, the exhibition offered a strong contrast between the purely esthetic jugs and pots which had no excuse but their beauty, no aim but to give pleasure, no thought but to delight the esthetic appreciation, and the very practical tiling, the wall linings of majolica ware, which were primarily for use, fundamentally for service, but were at the same time not without their full share of the artistic sympathetic treatment. There is no need to dwell upon the technical difficulties which Mr. Grueby met and overcame. In an artistic sense these do not concern us, for art is not measured by technicalities, but when we look back ten years and appreciate how utterly impossible it would have been to collect together any such work as was shown in this exhibition, and when we realize how closely this work is in touch with the best spirit of the old Japanese ware which lines the walls of our Art Museum, we can appreciate that though we may not yet have reached the height of the Japanese potter, we at any



rate have been able, in this busy country, to give the time and thought and artistic ability necessary to produce in enameled terra-cottas and in simple potter's clay, works of very high artistic value.

# Tensile Tests of Cement.

BY IRA O. BAKER, PROFESSOR OF CIVIL ENGINEERING, UNIVERSITY OF ILLINOIS.

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OF all the structural materials probably hydraulic cement is the most variable in its qualities; some varieties are strong and some weak; some are slow setting and some quick; some are durable and grow stronger with age, while some are liable to deteriorate in strength, and perhaps become an agent of destruction. Partly owing to the variability in the product and partly because of the greatly increased use of cement in architectural and engineering construction, rapidly increasing attention is being given to the testing of cement.

There is no lack of literature on this subject, which contains much valuable information, and yet the writer believes that much of the astonishing variation in the results obtained by different operators is due to a difference in methods. Unfortunately, there is no detailed and uniform method of procedure in use in this country; and it is usually impossible to determine from the report of the results what method was employed in making the tests. The writer will, therefore, attempt to make an unusually full and complete statement of the method of making the tests, and call attention to such variations in practise as are in common use.

In this article attention will be given to tests of tensile strength, partly because of the importance of such tests and partly since a description of the method of making these tests is a preliminary to the consideration of the other tests necessary to fully determine the quality and durability of a cement.

The tensile strength of cement mortar is usually determined by submitting a specimen of 1 sq. in. cross section to a tensile stress. The reason for adopting tensile instead of compressive tests is the greater ease of making the former, and the less variation in the results. Mortar is eight to ten times as strong in compression as in tension.

The accurate determination of the tensile strength of cement is a much less simple process than at first appears. Many things, apparently of minor importance, exert such a marked influence upon the results that it is only by the greatest care that trustworthy tests can be made. The variations in the results of different experienced operators working by the same method and upon the same material are frequently very large. The variation is chiefly due to the fact that there is no detailed and specific description of the method to be pursued in preparing and testing the specimens.

### NEAT *vs.* SAND TESTS.

It is very common to test neat cement mortar. There are two serious objections to this practise. First, most neat cements decrease in tensile strength after a time. This decrease seems to be due to a change in the molecular structure of the cement, the crystals growing larger with increase of age, thus producing a crowding which results in a decrease of the tensile strength. This decrease is most marked with high-grade Portlands which attain their strength rapidly, and usually occurs between three months and a year. A second objection to neat tests is that coarsely ground cements show greater strength than finely ground cements, although the latter when mixed with the usual proportion of sand will give the greater strength.

On the other hand, more skill is required to secure uniform results with sand than with neat cement.

### THE SAND.

The quality of the sand employed is of great importance, for sands looking alike and sifted through the same sieve give results varying 30 to 40 per cent.

The standard sand employed in the official German tests is a natural quartz sand obtained at Freienwalde, on the Oder, passing a sieve of 60 meshes per square centimeter (20 per linear inch) and caught upon a sieve of 120 meshes per square centimeter (28 per linear inch). The diameters of the wires of the sieves are 0.38 and 0.32 millimeters respectively. The standard sand recommended by the Committee of the American Society of Civil Engineers is crushed quartz used in the manufacture of sandpaper, which passes a No. 20 sieve (wire No. 28 Stubs's gage), and is caught on a No. 30 sieve (wire No. 30 Stubs's gage).

The crushed quartz consists of sharp, glossy splinters, while the standard German sand is composed of nearly spherical grains having a rough surface like ground glass. The quartz contains about 50 per cent. of voids, while the German standard sand contains but about 40. Crushed quartz gives less strength than standard sand and ordinarily common building sand will give a higher strength than standard sand, since usually it consists of grains of a greater variety of sizes, and consequently there are fewer voids to be filled by the cement.

### THE AMOUNT OF WATER.

The amount of water necessary to make the strongest cement varies with each cement. It is commonly expressed in per cents. by weight, although in part, at least, it depends upon volume. The variation in the amount of water required depends upon the degree of fineness, the specific gravity, the weight per unit of volume, and the chemical composition of the cement. If the cement is coarsely ground, the voids are less, and consequently the volume of water required is less. If the specific gravity of one cement is greater than that of another, equal volumes of cement will require different volumes of water. The chemical composition has the greatest influence upon the amount of water necessary. Part of the water is required to combine chemically with the cement, and part acts physically in reducing the cement to a plastic mass; and the proportion required for each of these effects differs with different cements. The nature and condition of the sand may also appreciably affect the quantity of water required. The finer the sand, the greater the amount of water required. Again, the more thorough the mixing, the less the quantity of water required.

Attempts have been made to establish a standard consistency, but there is no constant relation between the consistency and the maximum strength. With one cement a particular consistency may give maximum strength, while with another cement a different consistency may be required to develop the greatest strength. The relationship between consistency and strength will vary also with the details of the experiment. In reporting the results of tests the quantity of water employed should be stated.

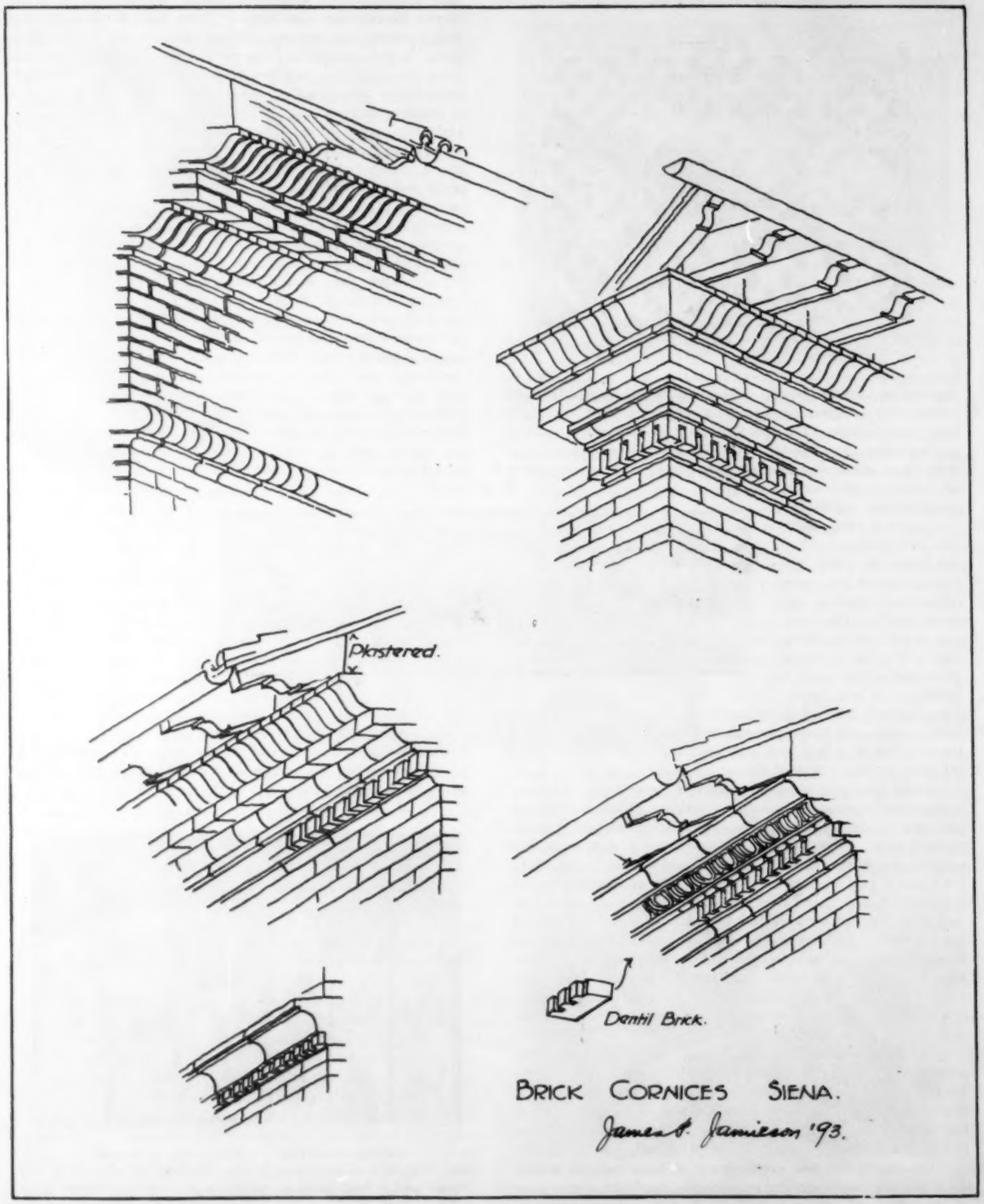
There are two distinct standards of consistency for the mortar employed in testing cements, — the plastic and the dry.

*Plastic Mortar.* This grade of mortar is that commonly employed in the United States and England, and is frequently used in France. There are two methods of identifying this degree of consistency, viz.: the Tetmajer method and the Boulogne method.

The Tetmajer method is much used on the continent of Europe. It is as follows: "The plasticity shall be such that a rod 0.4 of an inch in diameter, and weighing 0.66 lbs. will penetrate 1.25 ins. into a box 3 ins. in diameter and 1.57 deep, filled with the mortar."

The Boulogne method is much used in France, and gives substantially the same results as the Tetmajer method. It is as follows: "The quantity of water is ascertained by a preliminary experiment. It is recommended to commence with a rather smaller quantity of water than may be ultimately required, and then to make fresh mixings with a slight additional quantity of water. The mortar is to be vigorously worked for five minutes with a trowel on a marble slab to bring it to the required consistency, after which the four following tests are to be applied to determine whether the proportion of water is correct: —

"1. The consistency of the mortar should not change if it be gaged for an additional period of three minutes after the initial five minutes.




BRICK CORNICES SIENA.

James P. Jamieson '93.

# Fire-proofing.

## A CONSENSUS OF OPINION AMONG LEADING ARCHITECTS OF CHICAGO ON THE USE OF BURNED CLAY FOR FIRE-PROOF BUILDINGS.

AS a natural sequence to articles on the use of burned clay as a fire-resisting material by two of the architects of Chicago, THE BRICKBUILDER has sought by a series of interviews, to bring out a consensus of opinion among some of the other leading architects of that city who have had large experience in the erection of fire-proof buildings in which the latest and most improved methods have been used. These interviews demonstrate mainly the esteem in which clay is held as a building material with reference to diminishing losses by fire. There is unanimity among the interviewed in that they prefer burnt clay in some form for all fire-resisting work, and they have demonstrated this in their practise. There is not unanimity, however, in the special kind of clay manufactures preferred, while some have omitted to give their opinions on this interesting question. Hard hollow tile and porous hollow tile still have their advocates, while the virtues of semi-porous tile, that have been advocated in THE BRICKBUILDER, seem to have hardly attracted attention. But there is unanimity in the answers to the question, "Have the recent attacks on the burned-clay systems of fire-proofing, by promoters of other systems, influenced your judgment?" And the answers give no comfort to these promoters. There is more in these than most readers will apprehend, for while these attacks have appeared in publications, often over the names of civil engineers engaged for the purpose, those of which architects are most cognizant are such as they hear in their own offices from the advocates of these very devices and materials. While it is admitted by several that the only reasons why they had in certain cases consented to the use of other materials and methods was the saving of money, which their clients had insisted upon, one of the firms interviewed, which had never used anything but burned clay, made an outside statement that they had in one case tested these claims that the concrete systems were cheaper, by letting all who had asked the privilege submit proposals, all of which, whenever the ceiling and floor construction were both included, proved to be more expensive than flat hollow-tile arches forming both ceiling and floor construction.

These interviews have developed the fact, in Chicago at least, that there is a variance of opinion as to whether or not the makers of and contractors for the construction of burned-clay fire-proofing (all the makers in Chicago contract to set up their work complete) are endeavoring to improve and perfect their material and its method of application. It is fair to assume from this that some, at least, are trying to do so, and these must have been in mind with those who answered affirmatively.

As to the lessons to be found in recent fires in buildings of the modern sort designed to be fire-resisting, we regret to say that the answers do not show such an interest in the subject as some might be led to expect. The answers are mostly in general terms. Some are satisfied with the results, and others say that the work ought to be and can be better, but in what respect they say not.

Architects always want the best of everything if their clients can be induced to pay for it. But they do not often get it if the material is to be covered up when the building is finished. The *Pons Asinorum* that they too often have to cross — and frequently fail in the attempt — is the demonstration to a client who has the figures before him that two bids under the same specification represent two different things, and that the lowest is the most expensive. This is oftener the case with burned-clay fire-proofing material than any other, for there are no two clays alike, and no two makers produce the same article. It is no wonder, therefore, that it was difficult to get direct answers to the seventh question.

It was assumed in the eighth question that the price and quality of burned-clay fire-proofing had been reduced during the last ten years. That the price has been lowered is self-evident, and the reason for it generally given is in the one word "competition." It is also a matter of fact that the quality has *not* been reduced, but has remained stationary. It is a mistaken assumption, however, that improvement in manufacturing processes has reduced the price. To competition alone can this be ascribed, a competition which has offered every possible temptation to reduce the quality. But it has thus far only resulted in reducing weight, and discouraged all attempts to improve methods of construction.

Opinions differ as to the employment of special experts. Those who do not consider it desirable have large establishments of their own and scientific *attachés* regularly in their employ, while the views expressed by Mr. Beman seem to reflect the opinion of the average practitioner.

The following questions were submitted to those whose names appear hereafter, which have elicited very prompt and satisfactory responses.

1. Do you employ burned clay in fire-proof buildings, and if so to what extent?
2. Do you prefer it to other so-called fire-proofing systems, and if so for what reasons?
3. What kind of burned-clay material do you prefer? or would you employ different kinds for different purposes?
4. Have the recent attacks on the burned-clay systems of fire-proofing by promoters of other systems influenced your judgment?
5. Do you think that the makers of burned-clay fire-proofing are trying to improve and perfect their material and its method of application?
6. What do you think is the lesson to be learned from recent fires in buildings fire-proofed with burned clay?
7. Do you think it right for architects to consent to their clients always taking the lowest bid for this kind of work without regard to the differences in what the parties intend to furnish?
8. What do you think is the reason why the price and quality of burned-clay fire-proofing have been reduced during the last ten years?
9. Do you agree with the opinions given by Mr. Jenney in the July BRICKBUILDER?
10. Do you think it desirable for architects to employ fire-proofing experts to design the details of fire-proof work and supervise its erection, as is now done in the case of steel constructions?

Holabird & Roche, whose experience in the erection of the largest fire-proof buildings, in Chicago at least, has been fully equal to that of any other architectural office, submitted their answers in writing as follows: —

"We beg to submit categorical answers to your inquiries regarding fire-proofing" (as follows): —

*Question* 1. "Yes, for floors, partitions, and protection of all metal work.

*Question* 2. "Yes, we think it more fire-proof if properly plastered.

*Question* 3. "Porous terra-cotta.

*Question* 4. "No.

*Question* 5. "Yes.

*Question* 6. "We should have perfect covering of each piece of metal and more substantial fastening or anchoring and the best quality of plaster. No work to be unplastered.

*Question* 7. "No.

*Question* 8. "Improved methods of manufacture and general reduction of prices throughout the country caused by panic and competition.

*Question* 9. "Do not wish to give an opinion.

"2. A small quantity of the mortar dropped from the trowel upon the marble slab from a height of about 0.50 meters (20 ins.) should leave the trowel clean, and retain its form approximately without cracking.

"3. A small quantity of the mortar worked gently in the hands should be easily molded into a ball, on the surface of which water should appear. When this ball is dropped from a height of 0.50 meters (20 ins.), it should retain a rounded shape without cracking.

"4. If a slightly smaller quantity of water be used, the mortar should be crumbly, and crack when dropped upon the slab. On the other hand, the addition of a further quantity of water — 1 to 2 per cent. of the weight of the cement — would soften the mortar, rendering it more sticky, and preventing it from retaining its form when allowed to fall upon the slab."

With any particular cement the exact amount of water to produce the above degree of plasticity can be determined only by trial, but, as a rule, the quantity required will be about as follows: —

For neat cement: Portland, 23 to 25 per cent; natural, from 28 to 36, usually from 30 to 32 per cent.

For 1 part cement to 1 part sand: Portland cement, 13 to 15 per cent. of the total weight of cement and sand; natural, 17 to 20, usually 18 to 19 per cent.

For 1 part cement to 2 parts sand: Portland, 12 to 13 per cent. of the total weight of the sand and cement; natural, 12 to 16, usually 13 to 15 per cent.

For 1 part cement to 3 parts sand: Portland, 11 to 12 per cent. of the total weight of the sand and cement; natural, 12 to 13 per cent.

*Dry Mortar.* This grade of mortar is employed in the German and French governmental tests of tensile strength. The rules for the identification of this degree of consistency are not very specific. "Dry mortars" are usually described as being "as damp as moist earth."

The German government does not recognize tensile tests of neat cement mortar, but for 1 to 3 sand mortars specifies that the weight of water used for Portland cement shall be equal to 10 per cent. of the total weight of the sand and cement.

The French Commission gives a rule for 1 to 2, 1 to 3, and 1 to 5 mortars, with either Portland or natural cement, which is equivalent to the formula: —

$$w = \tfrac{3}{5} W R + 45,$$

in which w = the weight, in grams, of water required for 1,000 grams of the sand and cement;

W = the weight, in grams, of water required to reduce 1,000 grams of neat cement to plastic mortar;

R = the ratio of the weight of the cement to the weight of the sand and cement.

For a 1 to 3 mortar the preceding formula gives 8.5 per cent., which seems to show that the French standard requires less water than the German.

The cement laboratory of the city of Philadelphia employs the above formula, but uses 60 for the constant instead of 45. For a 1 to 3 mortar, the Philadelphia formula gives 10 per cent., which agrees with the German standard.

### MIXING THE MORTAR.

The sand and cement should be thoroughly mixed dry, and the water required to reduce the mass to a proper consistency should be added all at once. The mixing should be prompt and thorough. The mass should not be simply turned, but the mortar should be rubbed against the top of the slate or glass mixing table with a trowel, or in a mortar with a pestle. Insufficient working greatly decreases the strength of the mortar — frequently one half. The inexperienced operator is very liable to use too much water and too little labor. With a slow-setting cement, a kilogram of the dry materials should be strongly and rapidly rubbed for not less than five minutes, when the consistency should be such that it will not be changed by an additional mixing for three minutes.

Usually the mortar is mixed with a trowel on a stone slab; but when many batches are required there is a decided advantage in mixing the mortar with a hoe in a short V-shaped trough on the floor. Various machines have been devised with which to mix the mortar. The jig mixer is an apparatus in which the materials are placed in a covered cup, and shaken rapidly up and down. The Faija mixer consists of a cylindrical pan in which a mixer formed of four blades revolves. The latter seems to give the better result, but neither are used to any considerable extent.

### THE FORM OF BRIQUETTE.

The briquette recommended by the Committee of the American Society of Civil Engineers, Fig. 1, is the form ordinarily used in this country and in England. The form generally employed in continental Europe is somewhat similar to the above except that the section is 5 square centimeters (0.8 sq. in.), and the reduction to produce the minimum section is by very much more abrupt curves.

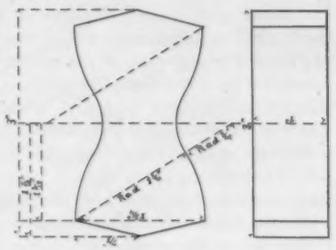


FIG. 1. AMERICAN FORM OF BRIQUETTE.

The molds are made of brass and are single or multiple, the latter being preferred where a great number of briquettes is required. The molds are in two parts to facilitate removal from the briquette without breaking it.

### MOLDING THE BRIQUETTE.

In molding the briquette there are two general methods employed, corresponding to the two standard consistencies of the mortar.

*Plastic Mortar.* As a rule, plastic mortar is molded by hand.

The Committee of the American Society of Civil Engineers' recommendations are as follows: "The molds while being charged should be laid directly on glass, slate, or some non-absorbing material. The mortar should be firmly pressed into the molds with a trowel, without ramming, and struck off level. The molding must be completed before incipient setting begins. As soon as the briquettes are hard enough to bear it, they should be taken from the molds and kept covered with a damp cloth until they are immersed."

The French Commission recommends the following method: "The molds are placed upon a plate of marble or polished metal which has been well cleaned and rubbed with an oily cloth. Six molds are filled from each gaging if the cement be slow setting, and four if it be quick setting. Sufficient material is at once placed in each mold to more than fill it. The mortar is pressed into the mold with the fingers so as to leave no voids, and the side of the mold tapped several times with the trowel to assist in disengaging the bubbles of air. The excess of mortar is then removed by sliding a knife blade over the top of the mold so as to produce no compression upon the mortar. The briquettes are removed from the mold when sufficiently firm, and are allowed to remain for twenty-four hours upon the plate in a moist atmosphere, protected from currents of air or the direct rays of the sun, and at a nearly constant temperature of 15 to 18 degs. C. (59 to 64 degs. Fahr.)."

Various machines have been devised for molding briquettes of plastic mortar, but none are used to any considerable extent. In Canada, and to some extent in England, the briquettes are molded by applying a pressure of 20 lbs. per square inch on the surface of the briquette. Some advocate a pressure of 1,000 to 1,500 lbs. upon the upper face of the briquette.

(*Continued.*)

*Question* 10. "We have been in the habit of making our own drawings and details."

Daniel H. Burnham, speaking for D. H. Burnham & Co., who are too well known to need introduction, said in answer to the first question: "We use burned clay in all fire-proof buildings; for walls, both outside and inside, and for partitions. We also use large quantities of terra-cotta, enameled and unenameled, for exterior and interior construction and ornamentation. We use hollow-tile arches for all floors and hollow-tile protection for columns, beams, and girders."

In answer to the second question he said: "Yes; because by its use we have a fire proofing of the best quality and get the best results both in bracing and tying the structure together."

To the third question he said: "For exteriors we prefer brick walls, or heavy brick covering when metal columns actually carry the structure, because they are less likely to be injured by heavy cold water streams in case of fire. We prefer hollow-tile arches between beams because they brace the structure, protect the metal best, and can, with their air chambers, be put in with the greatest rapidity and with a minimum use of moisture, and also because they leave a strong, firm, flat ceiling, against which partitions can be braced effectually.

To question four he said "No," and to five, "Yes." He thought that the lesson to be learned from recent fires in buildings fire-proofed with burned clay is, that the modern methods protect the steel structure against fire thoroughly when they are properly applied. He declined to give an opinion on question seven.

To question eight he said: "I know nothing about the reduction in quality, because we use the best. I think mechanical processes have reduced the price during the last few years." He had not read Mr. Jenney's article, and therefore could give no opinion about it, but with regard to question ten he said: "Speaking for ourselves, we have our own corps of constructive engineers in this office, and these questions are examined and settled by them."

S. S. Beman said: "I have used burned clay of different kinds in all but one of my fire-proof buildings. I used concrete with metallic reinforcement on the tension system only in the last Studebacker Building on Wabash Avenue, Chicago. I had great trouble through delay on account of using the concrete system in winter in this building. A great deal of the work was frozen and had to be done over again. It is an undesirable system to use at such a time. Clay tile can be well set in any kind of weather. When using tile I think the most important thing is to set it right, with good joints, making every joint air tight. I prefer porous terra-cotta, if made of the proper kind of clay, wherever it is possible to use it. I have never used semi-porous hollow tiles. There is very little porous material that is properly made. It requires a plastic fire-clay, which is found in very few localities, and manufacturers should improve their output by using such clays; but most of it that we get is soft and rotten because the makers use local clays to save cost. That now made in large quantities at Chicago has been improved considerably during recent years. Many factories have failed through trying to make it of unfit material. There was once a factory at St. Paul which I understand made such inferior material that its capital was sunk because so much of its output was wasted and rejected. It was only when its failure was assured that it commenced to use the Chaska clay, which made the finest porous terra-cotta I have ever seen. Others took up the manufacture in that city, but I understand they continued to use the inferior clays. The first and best porous terra-cotta ever made in this country was manufactured in Chicago from the clay that comes out of the coal mines at Brazil, Ind., but no one is making porous material from it now. It is only used to mix with inferior clays."

In answer to question four, Mr. Beman said "No." In answer to question five he said: "I hardly think they are." As to question six, he had not studied in detail the published accounts of the results of recent severe fires in fire-proof buildings at Pittsburgh, or formed an opinion as to what should be done to improve fire-proof building materials of clay otherwise than as above stated. He had not tried to get anything better than the market for such things provided; in fact, he had only used such manufactures as he found them always trying to secure, the best.

In answer to question seven, he said: "No, I always dissuade them from it." He thought that competition among manufacturers has been the main factor in reducing the price and quality of the product where the same has been reduced.

As to why a great many architects have not taken an interest in having the fire-proofing systems improved, he said that men who were largely interested in the artistic side of their profession were inclined to be indifferent to such things, while his observation led him to believe that only a few architects who were not so much interested in fine art matters had made a study of the art of fire-proofing applied to construction. In such a state of affairs it was not to be expected that much improvement would result. These were the plain facts. In fact, architects generally who are very busy had little time to do missionary work however much they might desire to do so. If they did, it would often be at the expense of other matters of equal importance. He thought, however, that there should be a consensus of opinion among architects who were designing fire-proof structures; that they should decide between them what is best, stand together and decide to demand it. But he believed this ideal state would never be realized.

Mr. Beman is a believer in having all fire-proof material thoroughly secured in place, though he has no special system to suggest. In his own practise, he has insisted upon the use of copper wires for tying the work together wherever possible to use it, and holding it from the inside, so that all holdfasts will be protected. He has had fires in several buildings he has designed, and there have been no failures in the fire-proof material used. He dislikes the weight of hard tile, which, in case some of it is dislodged, might disturb others in its fall. In other respects he agrees with the opinions expressed by Mr. Jenney. In reply to the tenth question he said in conclusion: —

"I think there ought to be an opening for a specialist in fire-proofing. It is quite as important as any other special branch of the craft, such as steel work, sanitary conditions, etc., where fire-proof buildings are concerned."

(*Continued.*)

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THE report of fire losses for 1897 will be of interest to the progressive architect who has made a study of fire-proof structures. The very material reduction in fire losses can scarcely be considered the result of accident. By observing the report (see page 154, THE BRICKBUILDER) it will be seen that the drop in losses is not simply a sudden drop in 1897, but a gradual diminution, 1897 being less than 1896, and 1896 than 1895, and smaller than any year since 1890. This result must be highly satisfactory to both architects and manufacturers of fire-proof materials. And the progressive character of this diminution in losses augurs some influential cause, and this certainly must be found in the increase of fire-proof and slow-burning structures during the last few years. Up to within a short time underwriters have not been willing to give much credit to fire-proofing as a fire preventative or saving feature, but some of the late fires in this class of buildings, especially the Pittsburgh fire, have compelled them to acknowledge the sturdy character of these structures, and recent insurance rates in New York have shown how fully they believed in their safety.— *Architecture and Building.*

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NUMBER nine of the series of publications issued in pamphlet form by the British Fire Prevention Committee, London, and which has just come to hand, contains a paper on "Lessons from Fire and Panic," by Thomas Blashill, F. R. I. B.A., Superintending Architect to the London County Council.

# Masons' Department.

## ESTIMATING BRICKWORK.

BY F. E. KIDDER.

THE most general method of estimating common brickwork, and one that is very largely followed by brick contractors in all localities, is by the thousand bricks, measured by certain fixed rules, and figured at a certain price per thousand, wall measure, the price per thousand being generally uniform, while the adjustment for different kinds of work is made in the manner of measuring.

The principle underlying this system is explained as follows: —

"The plain dead wall of brickwork is taken as the standard, and the more difficult, complicated, ornamental, or hazardous kinds of work are measured up to it so as to make the compensation equal.

"To illustrate: if, in one day, a man can lay two thousand brick in a plain dead wall, and can lay only five hundred in a pier, arch, or chimney top in the same time, the cost of labor per thousand in such work is four times as much as in the dead wall, and he is entitled to extra compensation; *but instead of varying the price*, the custom is *to vary the measurement* to compensate for the difference in the time, and thus endeavor to secure a uniform price per thousand for all descriptions of ordinary brickwork, instead of a different price for the execution of the various kinds of work." *

The application of this system, as actually carried out by the brick contractors of Denver, is as follows: —

All walls are first reduced to thousands of brick by multiplying the external superficial area of the walls by 15, for walls 9 ins. thick; by 22½, for walls 13 ins. thick; by 30, for walls 17 ins. thick; and in the same proportion for thicker walls. No deduction is made for openings containing less than 80 superficial ft., and where deductions are made for larger openings, the width is measured 2 ft. less than the actual width. Hollow walls are also measured as if solid. To the number of bricks thus obtained is added the measurement for piers, chimneys, arches, etc.

Footings are generally measured in with the wall by adding the width of the projection to the height of the wall. Thus if the footings project 6 ins. on each side of the wall, 1 ft. is added to the actual height of the wall.

Chimney breasts and pilasters are measured by multiplying the girt of the breast or pilaster from the intersections with the wall by the height, and then by the number of bricks corresponding with the thickness of the projection. Flues in chimneys are always measured solid.

Detached chimneys and chimney tops are measured as a wall having a length equal to the sum of the side and two ends of the chimney, and a thickness equal to the width of the chimney. Thus a chimney measuring 3 ft. by 1 ft. 4 ins. would be measured as a 16 or 17 in. wall, 5 ft. 8 ins. long.

The rule for independent piers is to multiply the height of the pier by the distance around it in feet, and consider the product as the superficial area of a wall whose thickness is equal to the width of the pier. In practise, many masons measure only one side and one end of a pier or chimney.

Arches of common bricks over openings of less than 80 superficial ft. are usually disregarded in estimating. If the arch is over an opening larger than 80 sq. ft., the height of the wall is measured from the springing line of the arch. No deduction is made in the wall measurement for stone sills, caps, or belt courses, nor for stone ashlar, if the same is set by the brick-mason. If the ashlar is set by the stone-mason, the thickness of the ashlar is deducted from the thickness of the wall.

The sum of all of these measurements represents a certain number of thousands of bricks, and the whole is then multiplied by a common price per thousand, as $6, $8, $12, or $16, according to whatever the cost of plain brickwork may be. If the building is to be faced with pressed brick, *the actual cost* of the pressed brick, as nearly as it can be computed, is added to the estimated price of the common pressed-brick work, nothing being added for laying the pressed brick, nor anything deducted from the common brick measurement, the measurement of the common work displaced by the pressed brick being assumed to offset the difference in the cost of laying the pressed and common brick work.

In arriving at the cost of the pressed brick, the external superficial area of the walls faced with such brick is computed, and all openings, belt courses, stone caps, etc., deducted. 5 in. stone sills are not usually deducted. If a portion of the wall is covered by a porch, so that common brick may be used back of it, this space is also deducted. The net pressed-brick surface is then multiplied by 6, 6½, or 7 to obtain the number of bricks required, 6½ giving about the number of pressed bricks required to the square foot of the size used in Denver.

The topping out of the chimneys, if of face brick, is measured by girting the chimney and multiplying by the height, and adding the sum to the wall area. As a simple example of this system of estimating we will take a small brick house 28 by 32 ft. without cross walls, the basement walls to be 13 ins. thick, with footings 2 ft. 6 ins. wide; first-story walls, 13 ins. thick; second-story walls, 9 ins. thick; height of basement walls from trench to top of first floor joists, 8 ft. 6 ins.; from first-floor joists to top of second-floor joists, 10 ft. 6 ins.; from second-floor joists to plate, 9 ft.

*Wall Measurement:* —

Basement walls, equal 120 ft. (girt of building) × 9 ft. 10 ins. (height and projection of footing) × 22½; equals 26,550 bricks.

First-story walls, 120 ft. × 10 ft. 6 ins. × 22½; equals 28,360 bricks.

Second-story walls, 120 ft. × 9 ft. × 15; equals 16,200 bricks.

Topping out two chimneys, each 1 ft. 9 ins. × 1 ft. 5 ins., 14 ft. high above roof, equals 2 × 14 ft. × (1 ft. 5 ins. + 1 ft. 9 ins. + 1 ft. 5 ins.) × 30; equals 3,600 bricks.

Total brickwork equals 74,710 bricks; at $6.50 per thousand (present price in Denver), equals $485.60.

*Pressed Brick.* From grade to the under side of plate the wall measures 22 ft. 6 ins.; to be faced with $15 pressed brick of the common size.

The door and window openings measure 384 superficial ft.

Surface of pressed brick equals 120 × 22½, equals 2,700 sq. ft.

Deduct for openings, 384

2,316 sq. ft.

Add for two chimneys, 2 × 14 × 6 ft. 4 ins. equals 177

2,493 sq. ft.

2,493 × 6½ equals 16,204 pressed bricks, at $15 per thousand, equals $243.

Total amount of bid, $485.60, + $243, equals $728.60.

The above figures are supposed to include the necessary lime, sand, water, scaffolding, etc., required to make the mortar and put up the walls, and also a profit for the contractor, but anything in the way of ironwork, as ties, thimbles, ash doors, etc., are figured additional to the above.

(*Continued.*)

* From *Rules of Measurement* adopted by the Brick Contractors' Exchange of Denver, Col.

## EFFECT OF MISTAKE IN STATEMENT OF AMOUNT.

UNDER the provisions of a mechanic's lien law, that claimant must make a just and true statement of the demand due him, his lien will not be defeated, though he claims too much in his statement, it being the result of honest mistake, and not an effort on his part to place a lien on the property for a greater amount than he honestly believes is due. — *Supreme Court, Mich.*

# Brick and Terra-Cotta Work In American Cities, and Manufacturers' Department.

NEW YORK.— Probably no branch of business has suffered more than the real-estate and building interests, but as many operations have been merely postponed, not abandoned, we do not feel any anxiety as to the ultimate result, and for those who have safely tided over the few months of dulness there will now be a period of activity, according to all indications.

Among the few items of real interest might be mentioned: —

In the recent competition for the new Free Public Library of Jersey City there were about fifty competitors, and the successful ones were Brite & Bacon, of New York. This was in every way a model competition and all architects and members of building committees would do well to study its history. The only criticism we would make as to the conditions is that too many small details were called for in them, matters not in any way related to the planning of the building, such as the "number of sixteen candle-power lights to be used," "provision for electric bells," etc. Messrs. James Brite and Henry Bacon, Jr., are very well known in New York and are considered one of the most promising of the younger firms of architects, the former having been associated with William Schickel & Co., and being the first winner of the Architectural League's Gold Medal. Mr. Bacon has been for many years with McKim, Mead & White, having been formerly a Boston man and winner of the Rotch scholarship. Their work is simple and dignified, showing the result of good scholarly training uncontaminated by French influence.

EAGLE ON DOME, PUBLIC LIBRARY AND MUSEUM, MILWAUKEE, WIS.
Executed by the Northwestern Terra-Cotta Company.
Ferry & Clas, Architects.

Charles C. Haight has planned a two-story brick warehouse to be built for the Trinity Corporation at a cost of $30,000.

Henry Anderson has prepared plans for an eight-story brick apartment house to be built on West End Avenue, corner 80th Street; cost, $300,000.

Ralph S. Townsend has planned a seven-story brick flat building to be erected on West End Avenue; cost, $175,000.

The same architect has also planned a six story brick apartment building to be erected on 80th Street, near West End Avenue; cost, $75,000.

C. P. H. Gilbert has prepared plans for a residence, five stories, to be built on Fifth Avenue near 74th Street; cost, $40,000.

M. W. Morris, architect, is preparing plans for two four-story brick and stone residences to be built in Brooklyn; cost, $50,000.

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PHILADELPHIA. — The visitor to Philadelphia, architecturally as well as historically interested, may now note the result of recent changes in State House Row. Architect T. Mellon Rogers has had in hand for a year or more the delicate task of restoring not only the interior of the old building, but the exterior appearance of the entire group, as nearly as possible to the original condition. This required the demolishing of the wings connecting the State House with the Court Room and Congress Hall, in order to replace the low, two-story structures that originally flanked the main building to which they are connected by a high and disproportioned, but none the less quaint-looking arcade. All that remained to aid in the restoration were, over and above a very meager description, some quite inadequate cuts, but the result seems to justify the idea that we have now a fair representation of the original. The date, 1735, on the conductor heads seems to conflict somewhat with the new appearance of the brickwork, especially in the rear, where new bricks were used. Those who remember the old building as it was previous to this restoration may regret somewhat the removal of the Corinthian doorway from the front, but it is unmistakable that the entrance with its flat arch and heavy frame, as restored, looks older, more primitive, and more colonial. The first-story interior has not been changed materially, although the change seems great on account of the removal of the curios that lumbered the place before. The hallway now looks magnificent with an arcade opened up on one side, and the painting of the staircase in its old color. Altogether the changes have been instructive ones to the architect, and a material advantage accruing is the much more open side that Independence Square has to Chestnut Street.

The new width of Delaware Avenue, now being had by the moving out of the bulkhead line one hundred feet, is giving much-needed improvement to the architecture of the river front. The Pennsylvania & Reading Railroad ferry houses are nearing completion, the former being a two-storied copper front, with pilasters at intervals along the second story carrying a horizontal cornice, back of which stop the various roof slopes, while the latter takes the opposite tack, and uses the gable ends of the waiting room and shed roofs as the architectural features. The Pennsylvania work was designed by the company's architect, Mr. Cookman, the Reading work by Cope & Stewardson.

A number of old ramshackle buildings have been removed at the corner of 10th and Walnut Streets to make way for an extensive brick and stone addition to the Jefferson Hospital. Windrim & Son are the architects of the building, which, while not ornate, promises to be quiet and dignified.

The architecture of Philadelphia is perhaps best represented by suburban work. Many of the younger architects are represented solely in this way — whole districts, such as that known as Overbrook, being built up by the younger men. An architectural visitor to Philadelphia would find much to study at such places. At Overbrook is situated the Blind School, by Cope & Stewardson, which is now being finished. Its white plastered walls and dark brown tile roofs make it a prominent feature of the suburb.

Furness & Evans, architects of the Pennsylvania Railroad Station, are about to put up another skyscraper at the opposite corner of Market Street for the West End Trust Company. The designs have not yet been made public, but the firm's individual style in architecture is well known.

During a recent heavy rain storm in the city, when the unprecedented fall of over five inches took place within three hours, the drainage system of the business section was found sadly lacking in capacity. Water backed up the soil pipes, and poured out of closets, basins, and other erstwhile inlets, in many cases several stories above

ground. The City Hall suffered considerable damage in its basement, while many of the department stores turned their entire male force into a bucket brigade to save their stock.

CHICAGO.— After the failure of young Mr. Leiter's wheat venture his father is said to have raised $10,000,000 in cash within a very short period. Of this sum $2,000,000 was borrowed from an insurance company and secured by the Grand Pacific Hotel and other valuable pieces of property. But the most important transaction was the sale of one piece of business property to Marshall Field for $2,135,000. This ground had been previously leased by a department store concern, which now pays for its ground rental and some additional storerooms in the same block, more than $150,000 per year. In another year it will begin the erection of a building to cost $1,000,000, for which Messrs. Adler & Sullivan are associated architects. This same building was referred to in the June BRICKBUILDER.

Another $1,000,000 structure, but one not so certain as yet, is a coliseum, a fire-proof building, 420 by 625 ft. in extent. It has been designed by Mr. Beman, the architect of the former building. It is proposed to locate this most elaborate amusement enterprise on the lake shore, and include, beside provisions for Wild West shows and baseball games, a double-decked pier 1,500 ft. long, with pavilion for band concerts.

Omitting mention of some doubtful building schemes even greater than the foregoing, it may be noted that the University of Chicago has some new buildings under way, Henry Ives Cobb, architect.

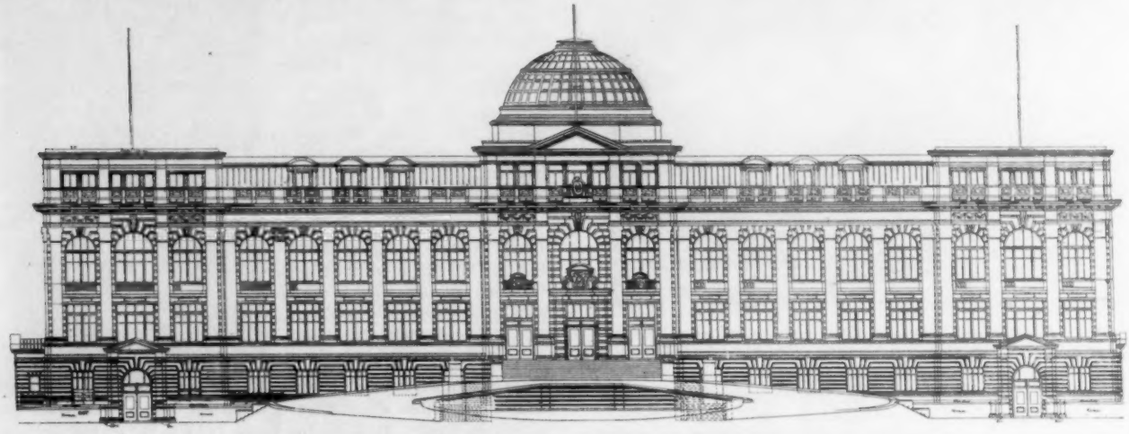
Frost & Granger have designed several new depots for the Northwestern Railway.

In the line of commercial work, Armour & Co. are about to erect a $350,000 elevator. The Hansell-Elcock Foundry Company, who have been awarded contract for part of the $400,000 worth of constructional steel for the new post-office building, are to erect an addition to their plant 120 by 140 ft. in size. The Chicago Street Railroad is to make an addition to its office buildings.

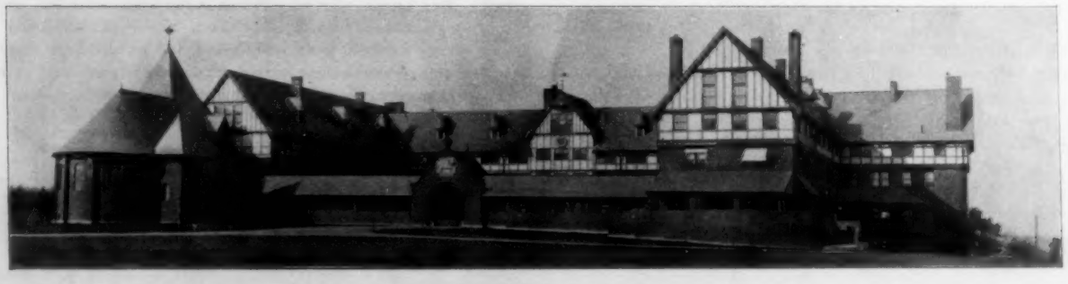
The Chicago Portland Cement Company expects soon to erect a plant in Illinois capable of producing 500 bbls. per day. The Titan Steel Company is said to be ready to construct a large steel plant at Pullman.

For building news which is not so agreeable from a business point of view, it may be noticed that an office building was lately transferred by foreclosure of mortgage. The fine Schiller Building, which cost $850,000, has gone into the hands of a receiver. The Dubuque Apartment Building, whose construction cost three years ago over $100,000, has just been sold for $20,500, to satisfy lien holders. There are more of the same sort. Some are due to wild and questionable financiering, and others, doubtless, to "hard times."

Another disastrous fire has occurred in Chicago. This time it was an inflammable apartment building. Firemen were commended publicly for heroism in saving eighteen lives, but four others perished. What the laws fail to do public sentiment may be able to accomplish after many lives are sacrificed to pay for the education of that sentiment. Since the Wabash Avenue horrors numbers of tenants have been known to move from similar fire traps to the buildings constructed of steel and hollow tile.



FRONT ELEVATION, MUSEUM BUILDING, NEW YORK BOTANICAL GARDEN.
R. W. Gibson, Architect.
For detail sheet see Plates 61 and 62.



ST. MARK'S SCHOOL, SOUTHBORO, MASS.
Henry Forbes Bigelow, Architect.

ST. LOUIS.— There is little of interest in the architectural field, the universal complaint among architects and builders being that they never experienced less activity, but almost every one is possessed with a spirit of hopefulness, believing there will be a general awakening of the building interests with the beginning of another year.

STATE ASYLUM FOR THE CHRONIC INSANE, WERNERSVILLE, PA.
Rankin & Kellogg, Architects.

A greater part of the work commenced in the early part of the year is either completed or nearly so. The Hargadine, McKittrick Building has just been occupied. It fills the intervening space between the Mallinckrodt Building on 9th Street and the Martin Building on 10th Street, extending through from Washington Avenue to Lucas Avenue. The building is eight stories and a good example of mill construction. The architects, Messrs. Eames & Young, have handled the Washington Avenue front very interestingly. The entire façade is in white stone. The Palladian motive has been employed in the frieze story, and in the spandrels are female figures in bold relief. It is encouraging to see such an effort made to make our commercial buildings good to look upon. The Lucas Avenue front has been made much simpler, and gray brick and terra-cotta have been used instead of stone. As the building is something like 250 ft. long with light only from each street, Luxfer prisms enter largely as a feature in the fronts.

The Benoist Building, on the corner of 9th and Pine Streets, has been completed. The building was designed to be ten stories, but only six stories have been built. The face is of red brick and terra-cotta. The floors have been formed with what might be called concrete joist, that is, concrete beams with iron bars have been placed close together and terra-cotta blocks have been fitted between the beams at the bottom, forming a level ceiling. C. D. McArdle is the architect and James D. McGee the engineer.

The large nine-story warehouse on the corner of 12th Street and Washington Avenue, being built by H. E. Roach & Sons for Mr. A. D. Brown, is also nearing completion. The two first stories are of white stone, and above the building is faced on three sides with cream-enameled brick.

Work continues at intervals on the new City Hall, the contract for the finishing of the chambers for the Council and House of Delegates having recently been awarded to Porter, White & Co., for $59,000.

A movement has again been inaugurated in the municipal assembly to widen 12th Street between Choteau Avenue and Cass Avenue and is meeting with more support than any previous effort, and 12th Street property owners are hopeful that their dream of a grand commercial boulevard in the near future may materialize. Should the scheme become an accomplished fact there is little doubt but it would become the retail center of the city in a very short time.

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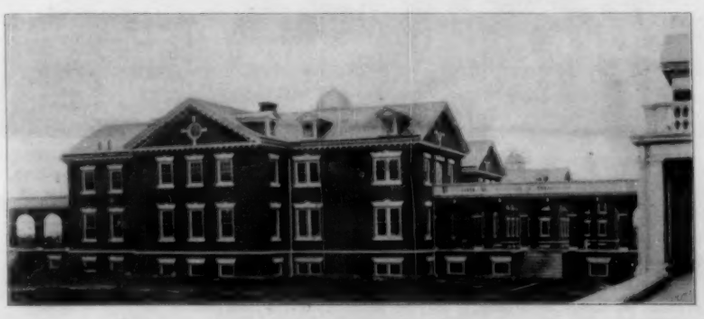
MINNEAPOLIS.— There has been a gratifying growth in public sentiment towards the use of brick as a material for street paving. At first asphalt was the only material that our city officials would consider, owing, it is suspected, to the fact that the "asphalt combine" owned the city council, and were awarded contracts year after year, at advance of 30 or 40 per cent. over brick, and against the remonstrances of the interested property owners to a large extent. The result has been just what might have been expected. The asphalt ring soon came to believe that they had a life "sinch," and they proceeded to run matters to their own satisfaction, and ignored public opinion as well as the terms of their contracts, by not doing their work properly, and then failing, in numerous instances, to make their work good as called for. They have been turned down to a large extent this year, and we are going to have a fair and full trial of vitrified brick on some of our principal streets.

One interesting phase of this matter is the position the bicycling fraternity has taken. At the outset asphalt was the only paving material they would consider. Now that they have had a fair trial of both, they appear to favor brick, and desire a path of that material on all asphalt pavements. We have also found that the asphalt will not wear in the gutters where there is dampness, and where horses are allowed to stand. They are now laying brick in the gutters and cutting the asphalt out. We also see the advantage of brick where there is tearing up of pavement for the laying of pipes. It means a permanent disfigurement. In our climate asphalt is certainly not the ideal material for pavements.

The corner stone of our new State Capitol Building was laid at St. Paul last week with great ceremony, the venerable Ex-Governor Ramsey handling the trowel. It was made the occasion of a two days' jubilee by the St. Paulites, who see therein a settlement of the capitol removal question for the next century, at least. Work on the superstructure is being pushed at present and will be until completion.

A new factor in the brick industry has entered into the local market during the past two or three years. It is a local concern with ample financial backing, who are making a specialty of producing difficult shades of brick to satisfy the demands of exacting architects, and they appear to be meeting those demands in a satisfactory manner. They have filled special orders in the Twin Cities that no other concern pretends to be able to produce. Some of the shades they turn out are a delight to an artistic eye, and we all hope that they will be able to match these varying shades sufficiently well to establish confidence in their ability to produce them on short notice, and



STATE ASYLUM FOR THE CHRONIC INSANE, WERNERSVILLE, PA.
Rankin & Kellogg, Architects.

DETAIL, BUILDING, JOHN ST., NEW YORK CITY.
Executed in white terra-cotta by the Excelsior Terra-Cotta Company; Ralph S. Townsend, Architect.

that they are to prove permanent, which latter seems assured when one looks into their methods of manufacture. The entrance of a new competitor has had a wholesome effect on the other people, who had the field nearly to themselves.

In the line of improvements now under way and to be done this season may be mentioned the following:—

Two new school buildings, eight rooms each, to cost $15,000 each; E. S. Stebbins, architect.

Business building for Thorpe Brothers, cost, $35,000; Fred Kees, architect. City Hospital, two main buildings, 40 by 225 ft. with Administration Building, 60 by 80 ft., three stories, to cost complete $250,000; the east wing only to be built this year, at cost of $60,000. Architects, MacLeod & Lamoreaux.

The old Grand Opera House has been remodeled into a six-story business building at a cost of $125,000; Fred Kees, architect.

A new residence for S. A. Harris, cost, $30,000; Bertrand & Chamberlin, architects. Residence for G. H. Partridge on Lowry Hill, to cost $30,000; Fred Kees, architect.

Passenger Station, C. M. & St. P. Railway Company, cost, $150,000; architect, Chas. S. Frost, of Chicago.

ST. PAUL.

Addition to Union Railway Station, to cost $55,000; architect, C. S. Frost, Chicago.

New passenger station for Northern Pacific Railway Company, at Fargo, N. D., to cost $30,000; architect, Cass Gilbert.

Catholic Cathedral at Fargo, N. D., cost, $25,000; architects, Bassford & Donahue.

Norwegian Lutheran Seminary at Hamline, Minn.; cost, $50,000; architects, Buechner & Jacobsen.

All the above buildings are of brick, mostly of pressed brick. There is a growing tendency in the practise of the best architects to aim at satisfactory effects by use of unselected brick, as to shades, and the results thus far attained have amply sustained this tendency. There is also a noticeable leaning towards brick as the only building material that will stand satisfactorily through all emergencies, as demonstrated in the recent large fires at Philadelphia and elsewhere.

## NEW TRADE PUBLICATION.

THE Ohio Mining and Manufacturing Company, Shawnee, Ohio, New York office 44 Pine Street, has recently issued an exceptionally interesting and attractive catalogue especially prepared for the use of architects, as a practical guide in drawing up specifications for the Shawnee Brick.

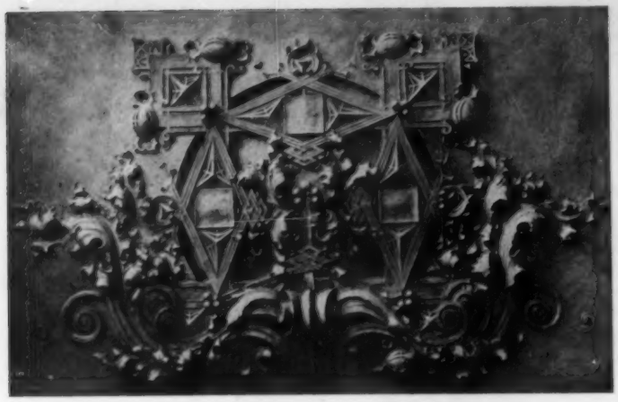
BRACKET, BAPTIST PUB. SOCIETY BUILDING, PHILADELPHIA, PA.
Executed by the Conkling, Armstrong Terra-Cotta Company.
Frank Miles Day & Bro., Architects.

The able and consistent manner with which the purpose of the catalogue is maintained throughout is particularly gratifying, every page being devoted to pertinent information relative to the subject in hand. In the opening pages the character and quality of the product are conservatively mentioned in a brief introduction. A short description follows of the various colors, grades, and sizes of their brick. To facilitate ordering, there is explained a simple yet comprehensive system of distinguishing by a method of classification any brick desired. Several pages are devoted to scale drawings of arches, with rules for specifying brick for same.

A particularly interesting feature of the catalogue is the half-tone illustrations (one half reduction) and full-sized profile drawings of over ninety different shapes of molded brick made by the company.

Lack of space permits us to touch upon only a few of the salient

UNITED STATES APPRAISERS' WAREHOUSE, NEW YORK CITY.
Seven hundred and sixteen thousand face brick used in this building, furnished by the Washington Hydraulic-Press Brick Company through their agents, Fredenburg & Lounsbury, New York City.
William Martin Aiken, Architect.



PANEL, FOURTH STORY BAYARD BUILDING, NEW YORK CITY.
Executed by the Perth Amboy Terra-Cotta Company.
Louis H. Sullivan and Lyndon P. Smith, Architects.

features of the catalogue. A perusal of its pages will develop many other points of interest. We are confident that the book will be highly appreciated among the architectural profession as a work of reference. Parties desiring copies should communicate with the company either at Shawnee, Ohio, or 44 Pine Street, New York.

## CURRENT ITEMS OF INTEREST.

The Union Akron Cement Company, Buffalo, N. Y., are furnishing their cement for a large business block at Akron, Ohio, and also for the brick paving being laid at Meadville, Pa.

H. F. Mayland & Co., New York agents of the Burlington Architectural Terra-Cotta Company, are supplying the architectural terra-cotta for a large store building being erected at Brooklyn, N. Y.

Sayre & Fisher Company are furnishing the limestone gray brick being used in the construction of the new Metal Exchange Building, corner John and Clift Streets, New York City, Clinton & Russell, architects.

H. E. Fuller & Co., Boston, New England agents for the Burlington Architectural Terra-Cotta Company, have contracted to supply the architectural terra-cotta for a new business block at Holyoke, Mass., George P. Alderman, architect.

The Illinois Supply and Construction Company, St. Louis, Mo., who represent the Tiffany Enameled Brick Company in that district, are supplying 100,000 9 by 4½ in. enameled blocks, to be used in the new Brown Building, 12th Street and Washington Avenue, St. Louis.

Sayre & Fisher Company are furnishing the limestone gray brick being used in the construction of the addition to the main building of the Metropolitan Museum of Art, Central Park, New York City, R. H. Hunt, architect. The brick are of common size, and the order calls for more than 200,000.

The Fall River Bleachery, at Fall River, Mass., have placed the contract for their new mill with the Berlin Iron Bridge Company, of East Berlin, Conn. The building is 65 ft. wide and 200 ft. long with side walls of stone, the supporting framework being made of steel.

The New Haven Gas Light Company, of New Haven, Conn., have placed the contract with the Berlin Iron Bridge Company, of East Berlin, Conn., for their new fire-proof coal shed. The building is 60 ft. wide and 500 ft. long. The framework of the building is steel.

The American Mason Safety Tread Company has established agencies in a dozen of the larger cities throughout the country, from which good returns are expected, as real-estate owners and architects learn the efficiency of Mason Safety Tread as a protective device, and one to lengthen the wear of stairways. Great interest is being shown, especially in the use of this product for stairs in schoolhouses, as it provides a convenient and economical solution to a serious problem.

The American Enameled Brick and Tile Company are furnishing the enameled brick for lining the swimming tank of the new University Club, New York City, McKim, Mead & White, architects; C. T. Wills, builder; and about 80,000 semi-glazed brick to be used in the side and rear elevation of the Gugenheimer mansion, Fifth Avenue, New York City, Robert Maynicke, architect. These bricks will have the same finish as those used in the new Dunn Building, New York City.

The New England Sanitary Product Company are erecting at Old Harbor Point, Mass., near Boston, an absolutely fire-proof building 120 ft. wide and about 130 ft. long. The building is two stories high, and is of skeleton steel framework style, consisting of steel columns built in the walls, carrying heavy steel floor beams and girders, and clear span roof trusses which support the roof. The structural steel work in this plant was designed and is being furnished and erected by the Berlin Iron Bridge Company, of East Berlin, Conn.

The White Brick and Terra-Cotta Company has secured

WELLS & RICHARDSON CO.'S MANUFACTURING BUILDING,
BURLINGTON, VT.
W. R. B. Willcox, Architect.

contracts to furnish the architectural terra-cotta for the following buildings: Public school at Queens, L. I., architects, Boring & Til-

ton; apartment house, 327 W. 83d Street, New York City, architect, H. E. Hartwell; primary school, New Rochelle, N. Y., architect, Geo. H. Pierce; Stores and lofts, 56 Thomas Street, New York City, architects, Quinby & Broome; Cheeseborough Building, corner State and Pearl Streets, New York City, architects, Clinton & Russell; Hopkins apartments, 216–218 W. 16th Street, New York City, architects, Boring & Tilton; residence and stable at Great Neck, L. I., for Mr. James E. Martin, architects, Little & O'Connor.

THE copartnership heretofore existing between R. W. Allison, S. B. Goucher, W. B. Goucher, Samuel McAdoo, Frank Bowles, and W. H. Garlick, under the firm name of Empire Fire-Proofing Company, has been dissolved by mutual consent, and the assets and good-will have been assigned to a new company, organized under the laws of the State of New Jersey, which will continue the business under the name of Empire Fire-Proofing Company. Mr. R. W. Allison is the president and general manager of the new company; and Mr. John A. Hammett, who has had charge of the business at the Chicago office, under the former management, will continue same as vice-president of the new company. The general offices of the company are in the German National Bank Building, Pittsburgh, Pa., with branch offices in Monadnock Block, Chicago, Ill., 874 Broadway, New York, and Builders' Exchange, Philadelphia.

MELLON BLOCK, PITTSBURGH, PA.
Alden & Harlow, Architects. Architectural terra-cotta furnished by the Northwestern Terra-Cotta Co.

THE CELADON TERRA-COTTA COMPANY, LTD., have secured through their Buffalo agent, John H. Black, the contracts to furnish their roofing tiles on the three following buildings:—

Office Building, American side Niagara Falls, for Clifton and Niagara Falls Suspension Bridge Company (6 in. Conosera), R. A. Wallace, of Buffalo, architect.

Francis Xavier Parish House, Black Rock, N. Y. (10 in. Conosera), Carl Schmidt, of Buffalo, architect.

Band Stand, Delaware Park, Buffalo (8 by 2 in. Conosera), Loverin & Whelan, of Buffalo, architects.

# Fireplace Mantels.

The best ones to buy are those we make of Ornamental Brick. There's nothing else as good or as durable. Our mantels don't cost any more than other kinds, and are far better in every way—our customers say so. Don't order a mantel before you have learned about ours. Send for our Sketch Book showing 53 designs of mantels costing from $12 upwards.

Phila. & Boston Face Brick Co.,
15 LIBERTY SQ., BOSTON, MASS.

# INDEX TO ADVERTISEMENTS.


ADDRESS. PAGE

**ACETYLENE GAS GENERATORS.**
Napheys Acetylene Gas Generators . . . . . xxxii
J. B. Colt & Co., 3, 5, & 7 W. 29th St., New York.

**ADVANCE BUILDING NEWS REPORTS.**
The F. W. Dodge Co. . . . . xxxiii

**ARCHITECTURAL FAIENCE MANUFACTURERS.** (See Clay Manufacturers' Agents.)
Atwood Faience Company, Hartford, Conn. . . . . xxvi
New York Agents, Pfotenhauer & Nesbit, Metropolitan Building, New York City.
The Grueby Faience Company, 164 Devonshire Street, Boston . . . . xxvi
Philadelphia Agent, O. W. Ketcham, 24 So. 7th St.
New York Agent, 287 Fourth Ave.
Chicago Agent, C. T. Harris & Co., Marquette Bldg.

**ARCHITECTURAL INSTRUCTION.**
Correspondence School of Architecture, Scranton, Pa. . . . . xxxii
Harvard University, Lawrence Scientific School . . . . . ii

**ARCHITECTURAL TERRA-COTTA MANUFACTURERS.** (See Clay Manfrs.' Agents.)
American Terra-Cotta and Ceramic Company, Marquette Bldg., Chicago, Ill. . ix
Atlantic Terra-Cotta Company . . . . . vii
287 Fourth Ave., New York City.
Brick, Terra-Cotta and Supply Co., Corning, N. Y. . . . . x
Burlington Architectural Terra-Cotta Co., Burlington, N. J. . . . . ii
Conkling-Armstrong Terra-Cotta Company, Builders' Exchange, Philadelphia . v
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo. . . . xii
Excelsior Terra-Cotta Company, 105 East 22d St., New York City . . . iv
New England Agent, Charles Bacon, 3 Hamilton Place, Boston.
Fiske, Homes & Co., 164 Devonshire St., Boston . . . . . x
New York Office, Charities Building, 289 4th Ave. Philadelphia Office, 24 South 7th St.
Gladding, McBean & Co., San Francisco, Cal. . . . . ii
Indianapolis Terra-Cotta Co., Indianapolis, Ind. . . . . viii
New York Architectural Terra-Cotta Company, 38 Park Row, New York City . xxviii
New England Agents, Fiske, Homes & Co., 164 Devonshire St., Boston.
Philadelphia Office, 1341 Arch St.
New Jersey Terra-Cotta Company, 108 Fulton St., New York City . . . vii
Perth Amboy Terra-Cotta Company, New York Office, 160 Fifth Ave. . . . vi
Boston Agents, Waldo Bros., 102 Milk St.
Standard Terra-Cotta Company, 287 Fourth Ave., New York City . . . vi
Boston Agents, O. W. Peterson & Co., John Hancock Building.
Philadelphia Agent, W. L. McPherson, Building Exchange.
The Northwestern Terra-Cotta Company, Room 1118, The Rookery, Chicago . ix
White Brick and Terra-Cotta Company, 156 Fifth Ave., New York City . . viii
Winkle Terra-Cotta Co., Century Building, St. Louis, Mo. . . . . viii

**BRICK MANUFACTURERS (Pressed and Ornamental).** (See Clay Manfrs.' Agents.)
Brick, Terra-Cotta and Supply Co., Corning, N. Y. . . . . x
Brush & Schmidt, Office, 2 Builders' Exchange, Buffalo, N. Y. . . . . x
Conkling-Armstrong Terra-Cotta Company, Builders' Exchange, Philadelphia . v
Columbus Brick and Terra-Cotta Company, Columbus, Ohio . . . . xiii
Dagus Clay Man'f'g Co., Office, Ridgway, Pa.: Works, Daguscahonda, Pa . xiv
Day Brick Company, Belleville, Ill. . . . . ii
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo. . . . xii
Fiske, Homes & Co., 164 Devonshire St., Boston . . . . . x
New York Office, 289 Fourth Ave.
Philadelphia Office, 24 So. 7th St.
Gladding, McBean & Co., San Francisco, Cal. . . . . ii
Harbison & Walker Co., The. Office, 22d and Railroad Sts., Pittsburg, Pa. . xv
Hydraulic-Press Brick Co. . . . . xii
Home Office, Union Trust Building, St. Louis, Mo.
Illinois Supply and Construction Co., St. Louis, Mo. . . . . xii
Kittanning Brick and Fire Clay Co., Duquesne Way and 10th St., Pittsburgh, Pa. xi
Merwin, C. P. Brick Co., Berlin, Conn. . . . . xiii
New York and New Jersey Fire-proofing Company, 156 Fifth Ave., New York City. xxi
Ohio Mining and Manufacturing Co.: Office, 44 Pine St., N. Y.; Works, Shawnee, Ohio . . . . . xv
Penn Buff Brick and Tile Co., Prudential Building, Newark, N. J. . . . ii
Pennsylvania Enameled Brick Company, Townsend Building, New York City . xvi
Philadelphia Agent, O. W. Ketcham, Builders' Exchange.
Perth Amboy Terra-Cotta Company, New York Office, 160 Fifth Ave. . . vi
Boston Agents, Waldo Bros., 88 Water Street.
Philadelphia Office, 1044 Drexel Building.
Philadelphia and Boston Face Brick Co., 4 Liberty Sq., Boston . . . . 171
Powhatan Clay Manufacturing Company, Richmond, Va. . . . . xli
Raritan Hollow and Porous Brick Co., 874 Broadway, New York City . . xx
Ridgway Press-Brick Co., Ridgway, Pa. . . . . xiv
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New York Agent, O. D. Person, 160 Fifth Ave.
Sayre & Fisher Co., Jas. R. Sayre, Jr., & Co., Agents, 207 Broadway, New York xvii
New England Agent, Charles Bacon, 3 Hamilton Place, Boston.
Tiffany Enameled Brick Company, New Marquette Building, Chicago . . xvi
White Brick and Terra-Cotta Company, 156 Fifth Ave., New York City . . viii

**BRICK MANUFACTURERS (Enameled).** (See Clay Manufacturers' Agents.)
American Enameled Brick and Tile Co., 14 East 23d St., New York. xvii
American Terra-Cotta and Ceramic Company, Marquette Bldg., Chicago, Ill. . ix
Atwood Faience Company, Hartford, Conn. . . . . xxvi
Fiske, Homes & Co., 164 Devonshire St., Boston . . . . . x
New York Office, 289 Fourth Ave. Philadelphia Office, 24 So. 7th St.
Grueby Faience Co., 164 Devonshire St., Boston . . . . . xxvi
Illinois Supply and Construction Co., St. Louis, Mo. . . . . xii
Pennsylvania Enameled Brick Company, Townsend Building, New York City . xvi
Raritan Hollow and Porous Brick Co., 874 Broadway, New York City . . xx
Sayre & Fisher Co., Jas. R. Sayre, Jr., & Co., Agents, 207 Broadway, New York xvii
New England Agent, Charles Bacon, 3 Hamilton Place, Boston.
Tiffany Enameled Brick Company, New Marquette Building, Chicago . . xvi

**BRICK PRESERVATIVE AND WATER-PROOFING.**
Cabot, Samuel, 70 Kilby St., Boston . . . . . ii
Gabriel & Schall, 205 Pearl St., New York . . . . . xxxi

**BRIDGE AND BUILDING, IRON WORKERS.**
Berlin Iron Bridge Co., Berlin, Conn. . . . . xxxii

**CEMENTS.**
Alsen's Portland Cement, 143 Liberty St., New York City . . . . . xxx
Berry & Ferguson, 102 State St., Boston . . . . . xxxii
Commercial Wood and Cement Company, Girard Building, Philadelphia, Pa. . xxx
New York Office, 156 Fifth Avenue.
Cummings Cement Co., Ellicott Square Bldg., Buffalo, N. Y. . . . . xxxi
Davis, James A. & Co. . . . . xxx
Office, 92 State St., Boston.
French, Samuel H., & Co., York Avenue, Philadelphia, Pa. . . . . xxxi
Gabriel & Schall, 205 Pearl St., New York . . . . . xxxi
Lawrence Cement Company, No. 1 Broadway, New York City . . . . xxxi

ADDRESS. PAGE

**CEMENTS.**—*Continued.*
Lesley & Trinkle, 22 and 24 So. 15th St., Philadelphia . . . . . xxxi
Manhattan Concrete Co., 156 Fifth Ave., New York . . . . . xxxii
New York & Rosendale Cement Company, 280 Broadway, New York City . xxxi
New England Agents, Van Name & Co., Hartford, Conn.
James C. Goff, 31-49 Point St., Providence, R. I.
The J. S. Noble Co., 208 Lyman St., Springfield, Mass.
Lord Bros. & Co., Portland, Me.
Thiele, E., 78 William St., New York City . . . . . xxx
Union Akron Cement Company, 141 Erie St., Buffalo, N. Y. . . . . xxx
Waldo Brothers, 102 Milk St., Boston . . . . . xix

**CEMENT MACHINERY.**
Sturtevant Mill Co., Boston . . . . . xxxii

**CLAY MANUFACTURERS' AGENTS. Brick (Front Enameled and Ornamental), Terra-Cotta, Architectural Faience, Fire-proofing, and Roofing Tiles.**
Black, John H., 33 Erie Co. Savings Bk. Bldg., Buffalo, N. Y. . . . . xi
Illinois Supply and Construction Co., St. Louis, Mo. . . . . xii
Ketcham, O. W., Builders' Exchange, Philadelphia . . . . . iii
Lippincott, E. P., & Co., 24 Builders' Exchange, Baltimore, Md., and 808 F St., N. W., Washington, D. C. . . . . x
Mayland, H. F., 287 Fourth Ave., New York City . . . . . iii
Meeker, Carter, Booraem & Co., 14 E. 23d St., New York City . . . xviii
Peterson, O. W., & Co., John Hancock Building, Boston . . . . . iii
Twichell, G. R. & Co., 166 Devonshire St., Boston . . . . . xi
Waldo Brothers, 102 Milk St., Boston . . . . . xix
Willard, C. E., 192 Devonshire St., Boston . . . . . xix

**CLAYWORKERS' CHEMICALS AND MINERALS.**
Gabriel & Schall, 205 Pearl St., N. Y. . . . . xxxi
F. W. Silkman, 231 Pearl St., New York . . . . . xxvi

**CLAYWORKING MACHINERY.**
American Clay Working Machinery Co., Bucyrus, Ohio . . . . . xxxix
Chambers Bros. Company, Philadelphia, Pa. . . . . xxxix
Chisholm, Boyd & White Company, 57th and Wallace Sts., Chicago . . xxxix
Eastern Machinery Co., New Haven, Conn. . . . . xl
Simpson Brick Press Co., 415 Chamber of Commerce, Chicago, Ill. . . . xl
The F. D. Cummer & Sons Co., Cleveland, Ohio . . . . . xxxviii

**ELEVATORS.**
Eastern Machinery Co., New Haven, Conn. . . . . xl
Moore & Wyman, Elevator and Machine Works, Granite St., Boston . . xxxviii

**FIRE-PROOFING MATERIAL MANUFACTURERS.** (See Clay Manufacturers' Agents.)
Boston Fire-proofing Co., 166 Devonshire Street, Boston . . . . . xxii
Central Fireproofing Co., 874 Broadway, New York . . . . . xxv
Empire Fireproofing Co., 1301 Monadnock Block, Chicago . . . . . xx
Fawcett Ventilated Fire-proof Building Co., Bourse Building, Philadelphia . xxiv
New York Agent, F. L. Douglass, St. James Building, 26th St. and Broadway.
Boston Agent, James D. Lazell, 443 Tremont Bldg.
Fiske, Homes & Co., 164 Devonshire St., Boston . . . . . x
Gladding, McBean & Co., San Francisco, Cal. . . . . ii
Guastavino, R., 9 East 59th St., New York . . . . . xx
Boston Office, 444 Albany Street.
Maurer, Henry, & Son, 420 E. 23d St., New York City . . . . . xxiii
New York & New Jersey Fire-proofing Company, 156 Fifth Ave., New York City xxi
Pioneer Fire-proof Construction Co., 1515 Marquette Building, Chicago . . xxi
Pittsburg Terra-Cotta Lumber Company, Carnegie Building, Pittsburg, Pa. . xxii
New York Office, Townsend Building, Broadway and 25th Street.
Powhatan Clay Manufacturing Company, Richmond, Va. . . . . xli
Standard Fireproofing Co., 41 Cortlandt St., New York . . . . . xxi

**GRANITE.**
Gilbreth Seam-Face Granite Co., 85 Water St., Boston . . . . . xxxiv

**HANGERS.**
McCabe Manufacturing Co. . . . . xxxvi
557 W. 22d St., New York City.

**MAIL CHUTES.**
Cutler Manufacturing Co., Rochester, N. Y. . . . . ii

**MASONS' SUPPLIES.**
Gilbreth Scaffold Co., 85 Water St., Boston . . . . . xxxv
Hamblin & Russell Manfg. Co., Worcester, Mass. . . . . xxxvii
Waldo Brothers, 102 Milk St., Boston . . . . . xix

**MORTAR COLORS.**
Clinton Metallic Paint Company, Clinton, N. Y. . . . . xxxii
French, Samuel H., & Co., Philadelphia, Pa. . . . . xxxi

**MURESCO.**
Moore, Benjamin & Co., Brooklyn, N. Y. . . . . xxxvi

**PRESERVATIVE COATINGS.**
Smith, Edw., & Co., 45 Broadway, N. Y. . . . . xxxiii

**PLUMBING GOODS.**
Randolph & Clowes, Waterbury, Conn. . . . . xxxvi

**ROOFING TILES MANUFACTURERS.** (See Clay Manufacturers Agents.)
The Celadon Terra-Cotta Co., Limited . . . . . xxvii
Main Office and Factory, Alfred, N. Y.
Chicago Office, Marquette Building.
New York Office, 1120 Presbyterian Building, New York City.

**SAFETY TREAD.**
The American Mason Safety Tread Co., 40 Water St., Boston . . . . xxxiii

**SNOW GUARDS.**
Folsom Patent Snow Guard, 116 South St., Boston, Mass. . . . . xxxvii
Hamblin & Russell Mfg. Co., Worcester, Mass. . . . . xxxvii

**VENTILATORS.**
Pancoast Ventilator Co., The. 316 Bourse Building, Philadelphia, Pa. . . xxxviii

**WALL TIES.**
Cleveland Pat. Steel Wall Ties. Wason, Hamilton, and Dart Sts., Cleveland, Ohio . . . . . xxxvii
Hamblin & Russell Manfg. Co., Worcester, Mass. . . . . xxxvii
Morse Patent Wall Ties, J. B. Prescott & Son, Mfrs., Webster, Mass. . . xxxvi

**WINDOW SASH AND PULLEYS.**
Queen Sash Balance Co., 150 Nassau St., New York . . . . . xxxvii
The Shull Overhead Window Pulley, 116 South St., Boston . . . . xxxvii
100 Park Place, New York.
The Bolles Sash Co., 150 Nassau St., New York . . . . . xxxvii

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Is superior to any other Portland cement made. It is very finely ground, always uniform and reliable, and of such extraordinary strength that it will permit the addition of 25 per cent. more sand, etc., than other well-known Portland cements, and produce the most durable work. It is unalterable in volume and not liable to crack.

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RAY P. CUMMINGS, Vice-President.
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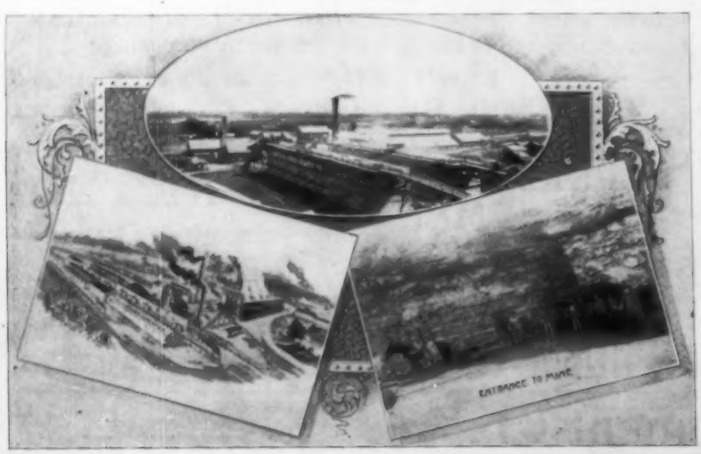

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The only preventative for scum and discoloration, neutralizing the Sulphate of Lime in the Clay and Water.

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*By "World's Columbian Commission."*

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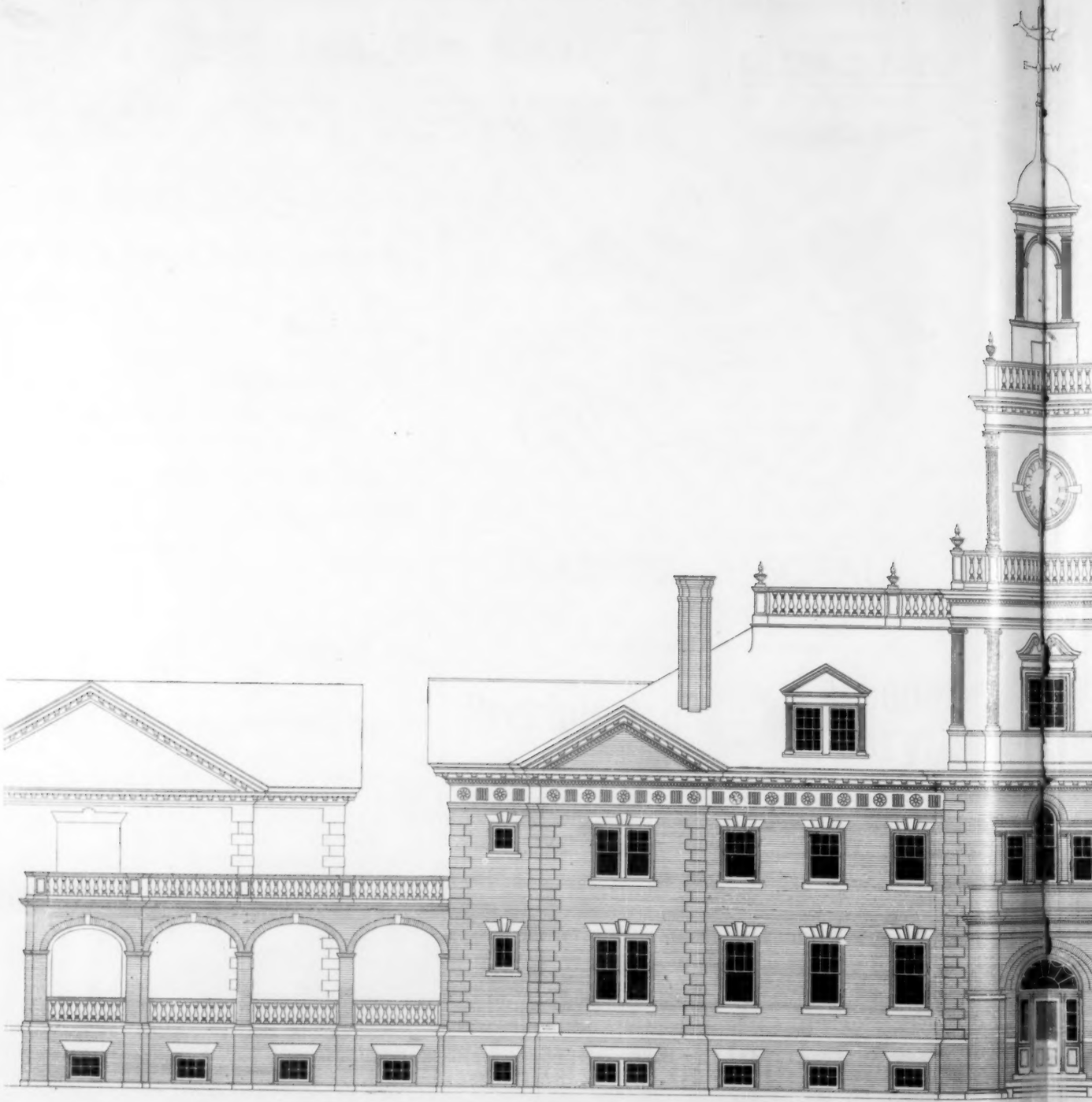
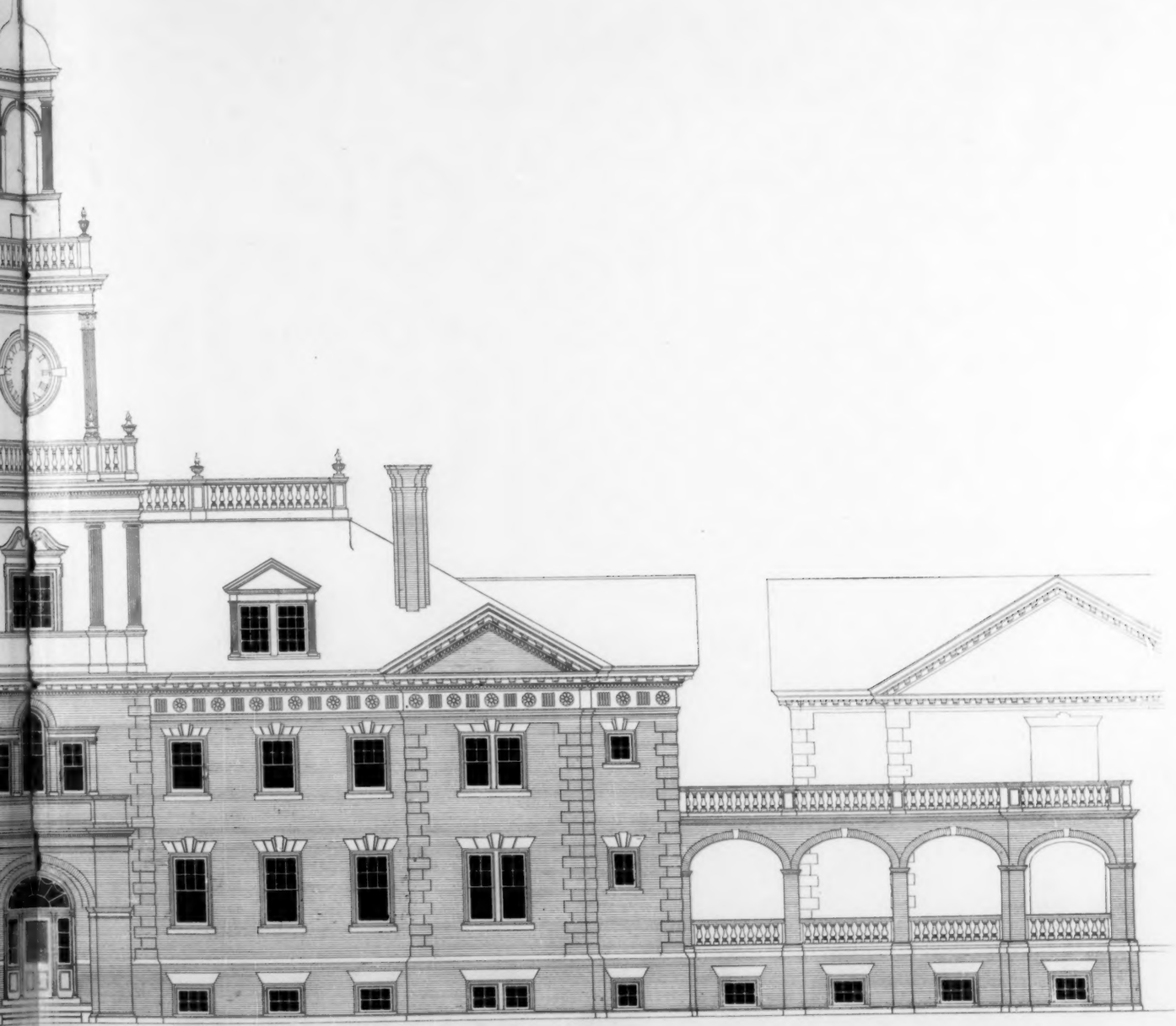


FRONT ELEVATI
ADMINISTRATION BU

STATE ASYLUM FOR CHRONIC INS
RANKIN & KELLOGG,



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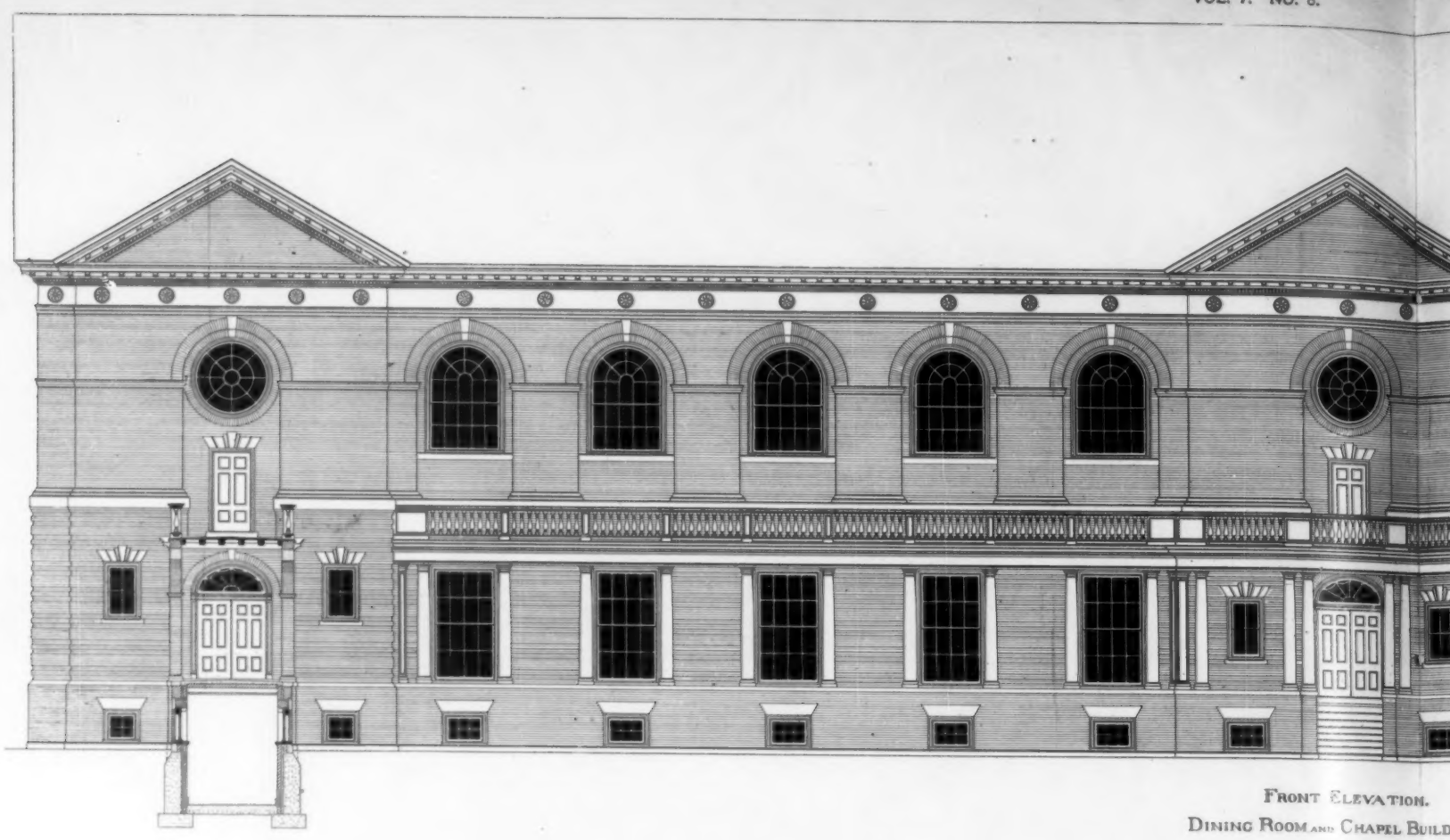
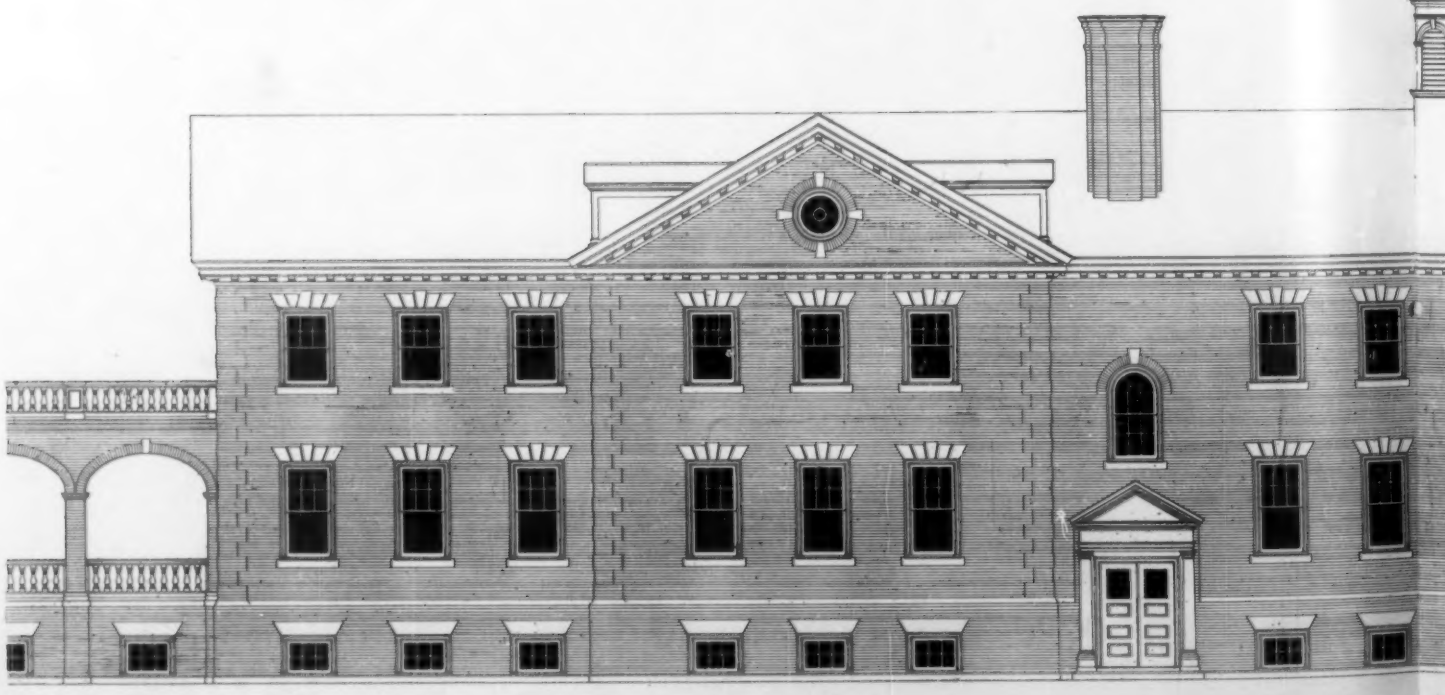
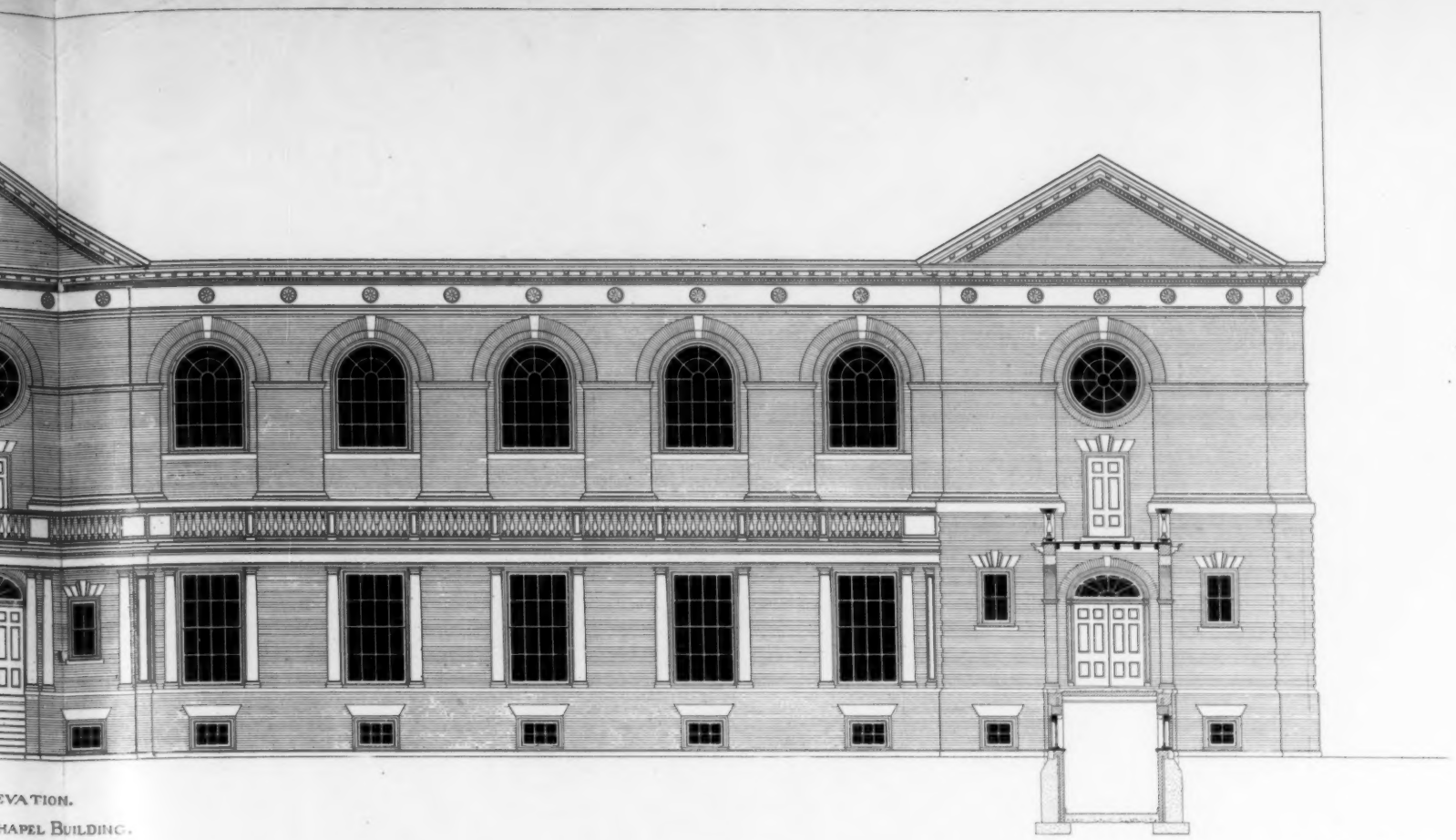
& KELLOGG, ARCHITECTS.



FRONT ELEVATION.
DINING ROOM AND CHAPEL BUILD



FRONT ELEVATION. W
STATE ASYLUM FOR CHRONIC IN
RANKIN & KELLOG



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ELEVATION, WARD BUILDING.
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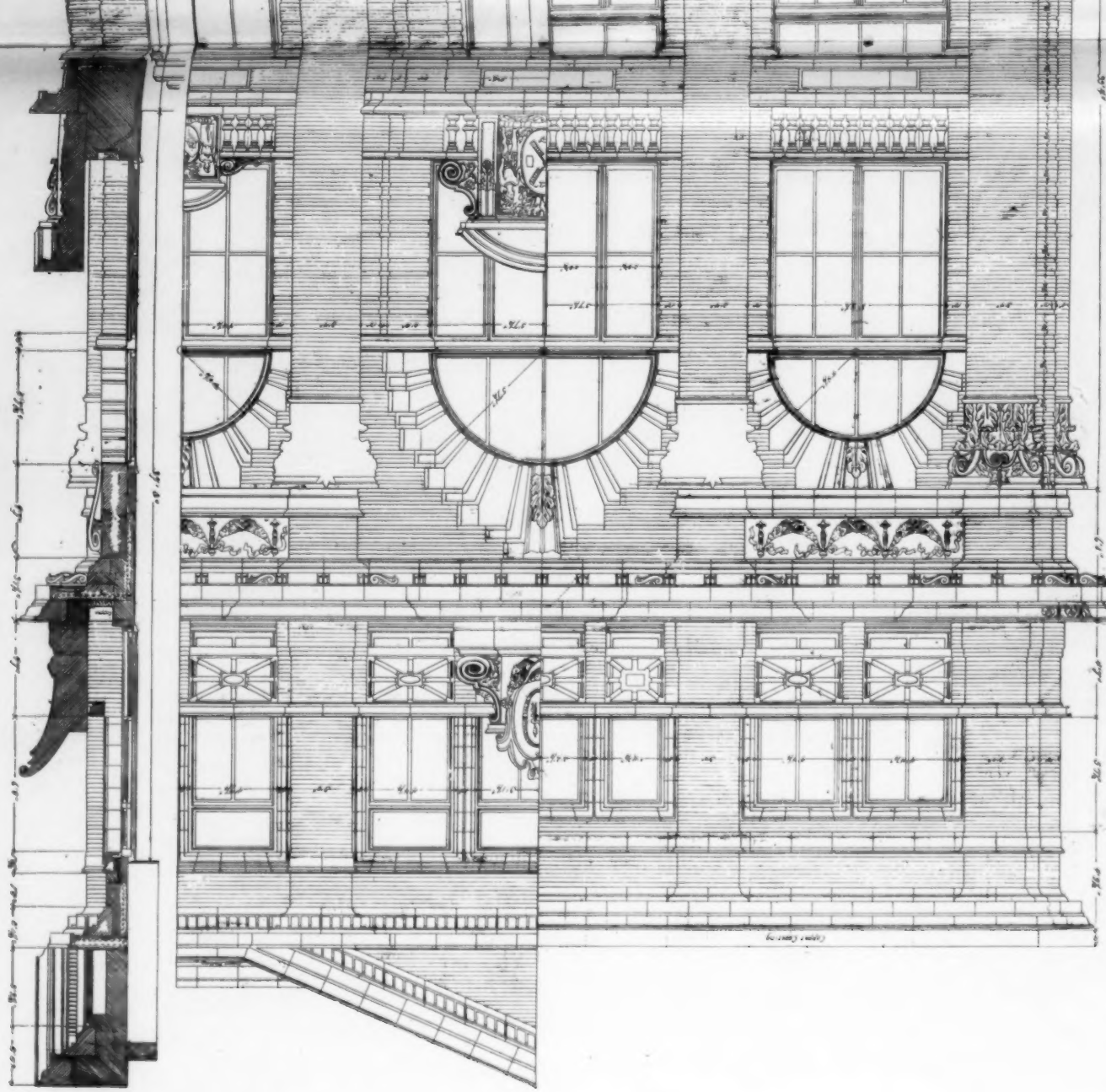
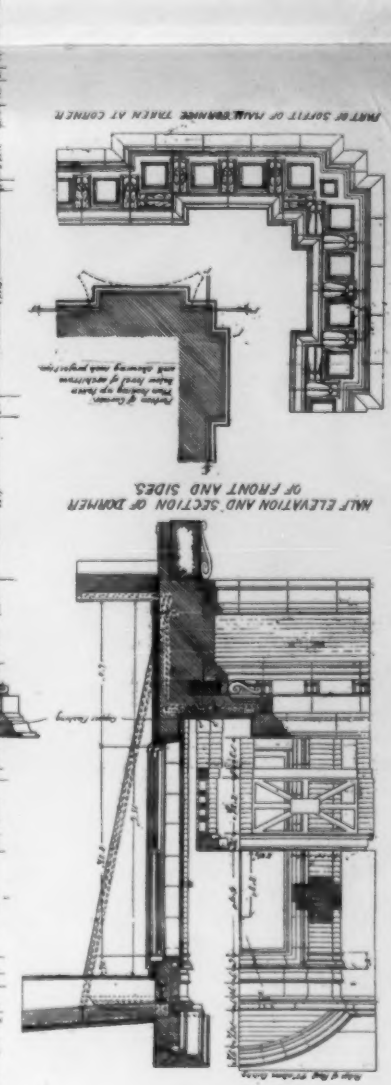
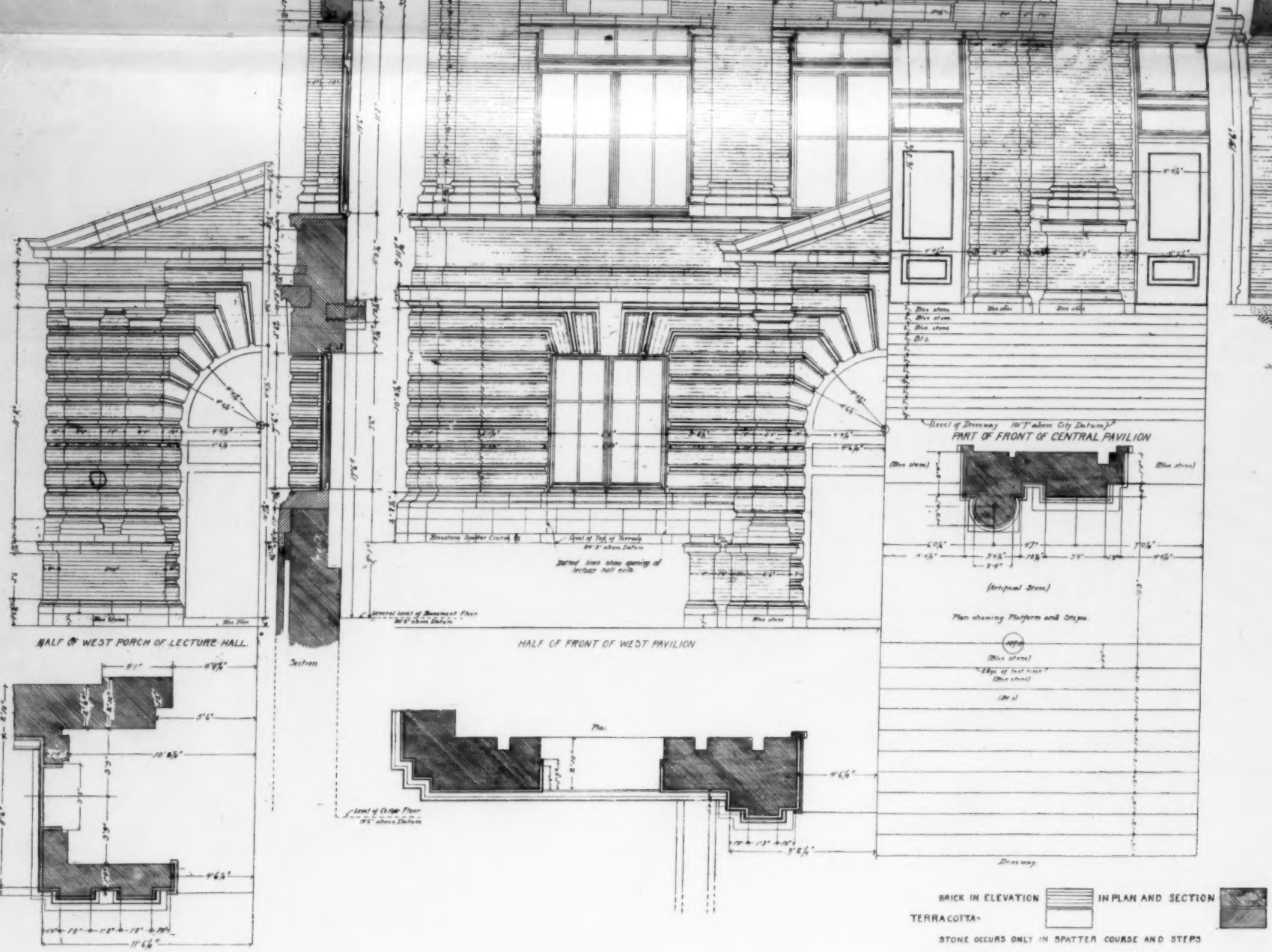




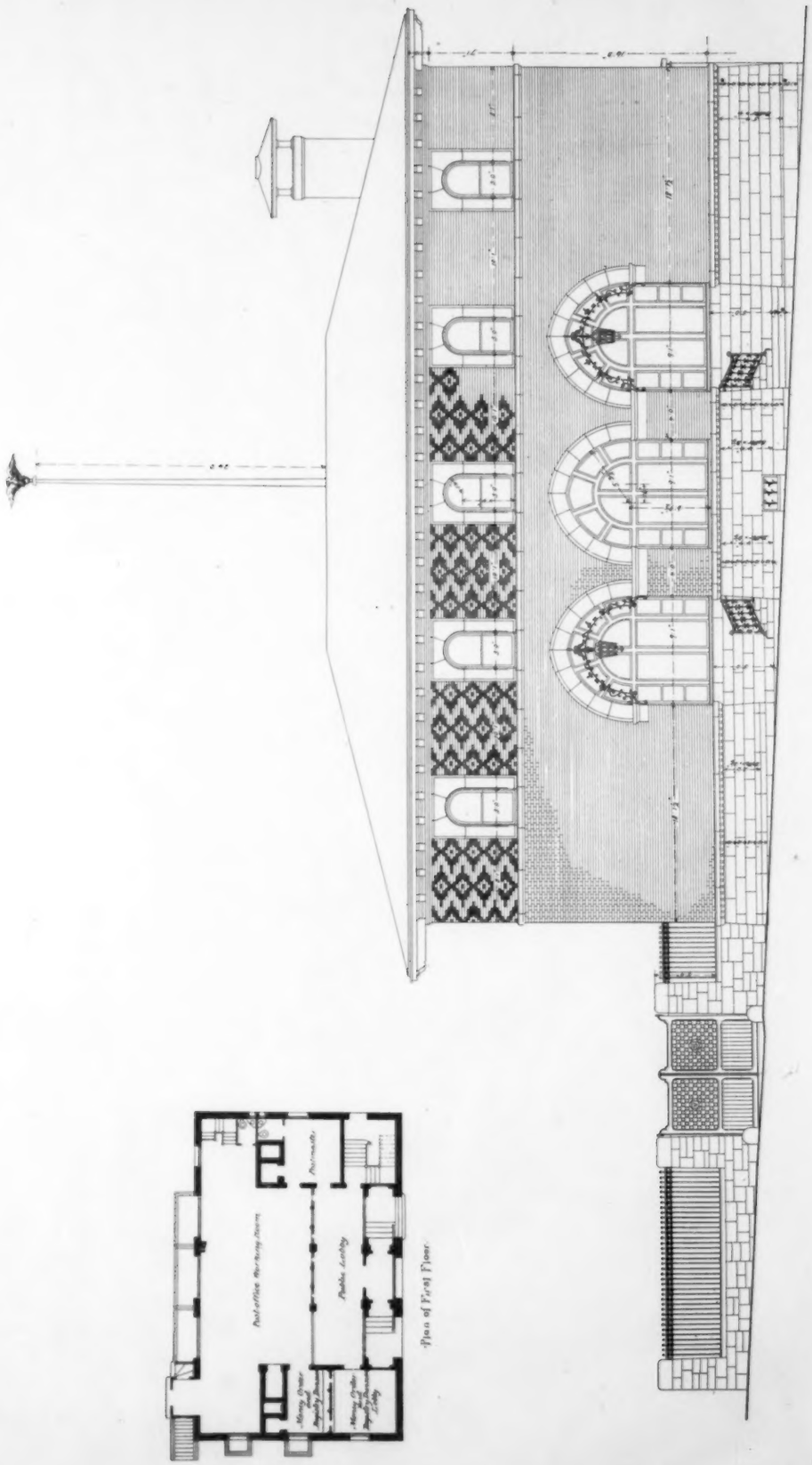

HALF OF WEST PORCH OF LECTURE HALL.
Section
HALF OF FRONT OF WEST PAVILION
Plan
PART OF FRONT OF CENTRAL PAVILION
(Level of Driveway 101'3" above City Datum.)
Plan showing Platform and Steps.
Driveway
BRICK IN ELEVATION
IN PLAN AND SECTION
TERRA COTTA
STONE OCCURS ONLY IN SPATTER COURSE AND STEPS
BRICK LAID FOUR COURSES TO TEN INCHES.

DETAILS OF EXTERIOR WALLS.

MUSEUM BUILDING, NEW YORK BOTANICAL GARDEN, NEW YORK CITY.

R. W. GIBSON, ARCHITECT.

For elevation see page 171.



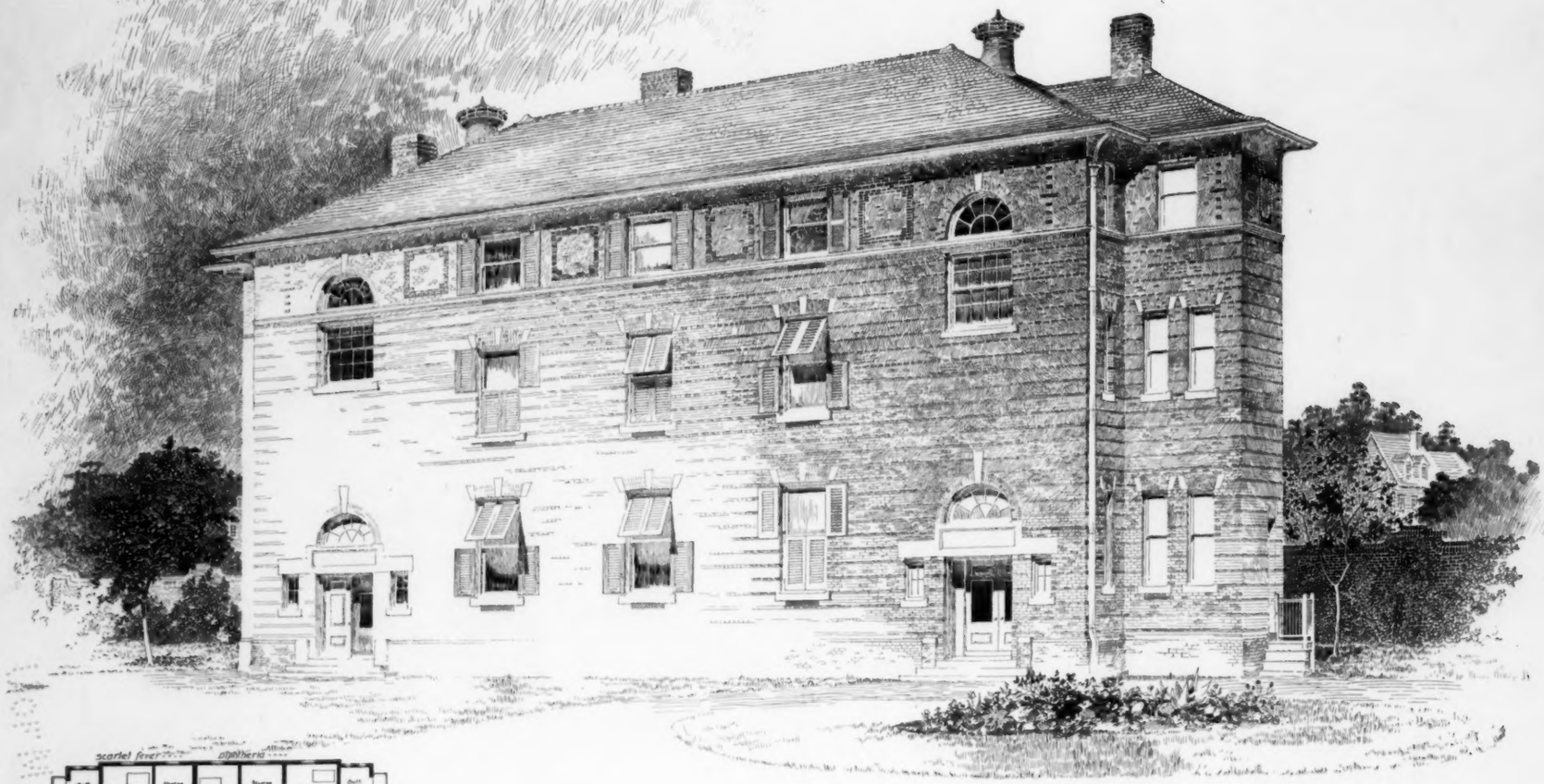
Second Street (Front) Elevation.

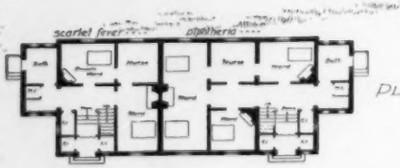
U. S. POST OFFICE, POTTSVILLE, PA.

JAMES KNOX TAYLOR, Supervising Architect.



Plan of First Floor



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MANUFACTURERS OF

# ARTISTIC ROOFING TILE,

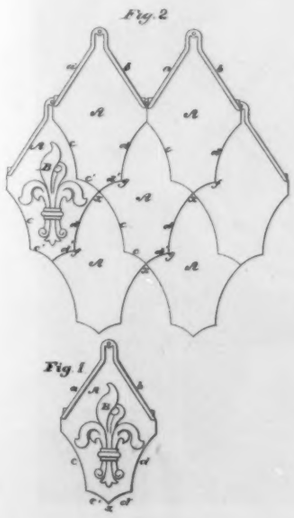
## ALFRED, N. Y.

(Under Babcock Patents.)

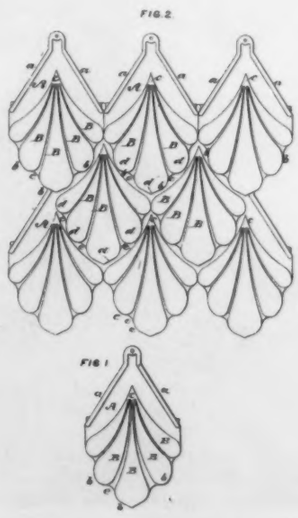
In this issue we show four different patterns of our Combination Tiles, with reference to their adaptability for producing different architectural effects in this combination of special designs thereon.

The first represents a standard 8 x 12 in. combination tile, with the figure of the Fleur-de-lis on it. Any other representation of same size could be used equally well on it, so that any heraldic design or coat of arms could be used, if desired. The second shows a design in imitation of a shell; the third, a cross band and rosette imposed on a regular diamond form; and the fourth an outline similar to the first, but with a plain surface with band and balls around the lower half.

The ornamentation possible in this style of tile is limited only by the wishes of the architect; for by our patent combination shapes, in which the upper half of the tile remains of uniform size and shape, any design desired can be superimposed on the lower or exposed half. Of course these various designs are, for the most part, better fit for siding than roofing tile, though they are weather-proof for either.




No 1.

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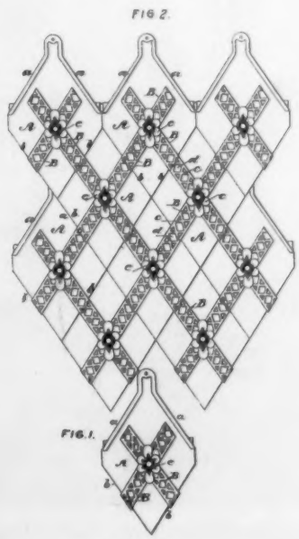


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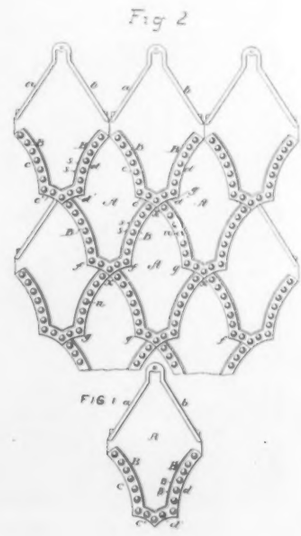


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